

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**



**AIR FORCE INSTRUCTION
11-202, VOLUME 3**

10 AUGUST 2016

**AIR EDUCATION AND TRAINING
COMMAND
Supplement**

30 JANUARY 2017

Flying Operations

GENERAL FLIGHT RULES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing web site at www.e-publishing.af.mil.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ AFFSA/XOF

Certified by: HQ USAF/A3X
(Mr. Steven A. Ruehl)

Supersedes: AFI11-202V3,
7 November 2014

Pages: 104

(AETC)

OPR: AETC/A3VO

Certified by: AETC/A3V
(Col Gregory A. Roberts)

Supersedes: AFI11-202V3_AETCSUP_I,
18 May 2015

Pages: 27

This instruction implements AFD 11-2, *Aircrew Operations*, by prescribing general flight rules that govern the operation of USAF aircraft (manned and unmanned) flown by USAF pilots, pilots of other services, foreign pilots, and civilian pilots. This instruction applies to Air Force activities operating aircraft on loan or lease, to the extent stipulated in the loan or lease agreement; Air Force Reserve Command (AFRC) units; and to Air National Guard (ANG) units. Public Aircraft Operations (PAO) under government contract for Air Force operations will comply with stipulations documented in written declaration of public aircraft status, applicable Title 14 Code of Federal Regulations (CFR) and this regulation. Waiver information, in accordance with AFI 33-360 tiering, may be found in [Chapter 1](#). Non-tiered compliance items in this instruction that are targeted for units above the wing or equivalent and above DRUs/FOAs may be waived by the MAJCOM/CC (delegable no lower than the MAJCOM Director), with the concurrence of HQ USAF/A35 unless otherwise noted. This publication may be supplemented,

but all supplements above wing or equivalent level must be routed to HQ AFFSA/XOF for coordination prior to certification and approval. Air Force Instruction (AFI) 11-2 Mission Design Series (MDS) Specific, Volume 3 instructions (e.g., AFI 11-2KC-10, Volume 3) may contain specific operational guidance unique to individual aircraft and crew positions. MDS-specific, Volume 3 instructions will not be less restrictive than this instruction. Address questions concerning this instruction to Headquarters Air Force Flight Standards Agency (HQ AFFSA) at HQ AFFSA/XOF, 6500 S. MacArthur Blvd, Bldg 4, Room 240, Oklahoma City, OK 73169, email: hqaffsa.xof@us.af.mil. See Attachment 1 for a list of terms and abbreviations. Use AF Form 847, *Recommendation for Change of Publication*, to recommend changes to this instruction in accordance with (IAW) AFI 11-215, *USAF Flight Manuals Program (FMP)*. The reports in this directive are exempt from licensing according to AFI 33-324, *The Air Force Information Collections and Reports Management Program*. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

(AETC) This supplement implements and extends the guidance of Air Force Instruction (AFI) 11-202, Volume 3, General Flight Rules. This supplement establishes the Air Education and Training Command (AETC) general flight rules, which support AETC objectives. With the exception of personnel participating in an AETC Associate Instructor program, this supplement does not apply to Air Force Reserve Command (AFRC) or Air National Guard (ANG) units unless specified by MAJCOM Memorandum of Understanding. See Attachment 1 for a glossary of references and supporting information.

(AETC) Unless otherwise specified, AETC/A2/3/10 is the waiver authority for this supplement. However, if applicable, NGB/A3 and AFRC/A3 are the waiver authorities for their respective gained units. For waivers to unit supplements, the unit generating the supplement will identify the waiver authority to that supplemental guidance.

(AETC) Forward proposed unit-level supplements to this instruction to AETC/A3V for coordination prior to publication. Before publication, ANG units will coordinate their supplements with the NGB/A3O. AFRC units will coordinate proposed local supplements through Standardization/Evaluation (Stan/Eval) channels to AFRC/A3. ANG and AFRC units will forward one copy of their approved supplement to their respective A3 after publication.

(AETC) Submit suggested improvements to this supplement via AF Form 847, *Recommendation for Change of Publication*, through command Stan/Eval channels to AETC/A3VO workflow email in accordance to AFI 11-215, *USAF Flight Manuals Program (FMP)* as supplemented. AFRC and ANG units will send comments and suggested improvements via AF Form 847 through Stan/Eval channels to AFRC/A3 or NGB/A3, respectively.

(AETC) Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*,

and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. Major changes include: (1) correcting administrative and grammatical errors, (2) changing tier compliance items per AFI 33-360, *Publications and Forms Management*, (3) adding departure decision flow chart to appendix, (4) outlining waiver processes for each tiered item, (5) incorporating flight duty period changes, (6) clarifying airfield lighting requirements, (7) updating RNAV 1801 requirements, (8) clarifying authorized weather sources, (9) correcting alternate weather requirements, (10) clarifying DVAs, (11) clarifying disaster area operations, (12) clarifying cold weather altitude corrections, (13) removed MAJCOM ability to waive alternate weather requirements IAW the CFR, (14) removed MAJCOM/A3 ability to authorize any airfield as an alternate regardless of weather conditions IAW the CFR, (15) adopts AF Form 679 and (16) other minor changes.

(AETC) This document is substantially revised and must be completely reviewed. This revision corrects administrative errors; changes tier compliance markings to comply with AFI 33-360; clarifies AFRC/ANG applicability; deletes AFRC/ANG-only guidance; requires use of AF 679 for waiver requests ([1.2.4.1](#)); deletes non-AETC mission guidance; reduces mobility Op Sup crew rest requirement ([2.1.5](#)); FDP waiver authority delegated to OG/CC ([2.2](#)); adds KC-46 maximum flying time ([Table 2.2](#)); maximum flying time waiver authority delegated to OG/CC ([2.6.1](#)); deletes authorization for aircrews to wear personal sunglasses during flight ([2.9.2](#)); updates GPS guidance ([3.23.4.1](#)); clarifies VRD guidance ([3.31.2](#)); updates weather retrieval information ([4.12.1](#)); updates alternate airfield filing guidance ([4.15](#)); raises fixed-wing VFR minimum ceiling to 1,500 feet ([4.16.1](#)); prohibits filing VFR to an airport where winds are forecast to be out of limits ([4.16.2.1](#)); deletes OG/CC authority to allow flight into forecast severe turbulence ([6.4.1.1](#)); deletes redundant BWC guidance ([6.4.3](#)); updates BASH guidance ([6.4.4](#)); deletes less restrictive RNAV guidance ([6.8.4.3.1](#)); and adds extensive EFB guidance ([Attach 6](#)).

Chapter 1— ROLES AND RESPONSIBILITIES	9
1.1. General.....	9
1.1. (AETC) General.....	9
1.2. Waivers.	9
1.2. (AETC) Waivers.	9
1.3. Compliance.	11
1.4. Operational Prerogative of Military Aircraft.	11
1.5. MAJCOM Supplements.....	11
1.5. (AETC) MAJCOM Supplements.....	12

1.6.	Deviations.....	12
1.7.	Violations.....	12
1.8.	Aviation Safety Reporting	12
1.9.	Airworthiness.....	13
1.10.	Communication, Navigation, Surveillance (CNS) Certification and Approval.....	13
1.11.	Primary Flight Reference (PFR).....	14
Chapter 2—	FLIGHT READINESS	15
2.1.	Crew Rest.....	15
2.2.	Flight Duty Period (FDP) (see Table 2.1).....	15
2.2.	(AETC) Flight Duty Period (FDP).	16
2.3.	Post-Flight Duties.	16
Table 2.1.	Maximum FDP (Hours).....	16
Table 2.2.	(Added-AETC) Maximum Flying Times (Includes Simulator Time).	17
2.4.	Deadhead Time.	18
2.5.	Alert Duty.	19
2.6.	Maximum Flying Time	19
2.7.	Flight Readiness Limitations	19
2.8.	Alertness Management and Fatigue Mitigation.....	20
2.8.	(AETC) Alertness Management and Fatigue Mitigation.....	21
2.9.	Aircrew Flight and Survival Equipment.....	21
Chapter 3—	GENERAL FLIGHT RULES	23
3.1.	Professional Flying Standards.....	23
3.2.	Nonrated Flyers.....	23
3.3.	Transporting Passengers Under the Influence.	23
3.4.	Tobacco Use.	23
3.5.	Transport of Drugs.....	23
3.6.	Hazardous Cargo.....	23
3.7.	Flight Displays.....	23
3.7.	(AETC) Flight Displays.....	23

	3.8.	Authorized Resources for Flight and Mission Related Duties.....	23
	3.8.	(AETC) Authorized Resources for Flight and Mission Related Duties.....	23
	3.9.	Portable Electronic Devices (PEDs).	24
	3.9.	(AETC) Portable Electronic Devices (PEDs).	24
	3.10.	Aircraft Movement on the Ground.	25
	3.11.	Crew at Stations.	25
	3.12.	Sterile Cockpit.	25
	3.13.	Inflight Reporting.	25
	3.14.	Oxygen and Pressurization Requirements (N/A for UAS).	26
Table	3.1.	Oxygen Requirements for Pressurized Aircraft.	27
Table	3.2.	Cabin Altitude Time Limits (DCS Prevention) (N/A for U-2 Operations).	28
	3.15.	Aircraft Lighting.	28
	3.16.	Airfield Lighting.	29
	3.17.	Right-of-Way.	30
	3.18.	Detect and Avoid.	30
	3.19.	Proximity of Aircraft.	30
	3.20.	Dropping Parachutists, Stores, or Other Objects.	31
	3.20.	(AETC) Dropping Parachutists, Stores, or Other Objects.	31
	3.21.	Fuel Jettison.	31
	3.22.	Radio, Laser, and Other Electromagnetic Emitter Restrictions.	32
	3.23.	Communication, Navigation, and Surveillance Equipment.	32
	3.23.	(AETC) Communication, Navigation, and Surveillance Equipment.	32
	3.24.	Formation Flights (Including Air Refueling).....	34
	3.25.	Large Scale Exercises.	35
	3.26.	Aerobatics and Air Combat Tactics.	35
	3.27.	Temporary Flight Restriction (TFR) Airspace.....	36
	3.28.	Uncontrolled Field Procedures.	36
	3.29.	Obstacle Clearance Responsibility.	36
	3.30.	Participating in Aerial Events.	36

3.31.	Simulated Instrument Flight.	36
3.32.	Simulated Emergency Flight Procedures.....	37
3.33.	Vertical-Lift Operations.....	38
3.33.	(AETC) Vertical-Lift Operations.....	38
3.34.	(Added-AETC) Barrier Operations.....	38
Chapter 4—	PREFLIGHT	39
4.1.	Flight Authorization.....	39
4.2.	Pilot in Command.	39
4.2.	(AETC) Pilot in Command.	39
4.3.	Approval Authority.....	39
4.4.	Flight Accountability.	39
4.4.	(AETC) Flight Accountability.	39
4.5.	Mission Planning Requirements.	39
4.5.	(AETC) Mission Planning Requirements.	39
4.6.	Off-Station Training.	44
4.7.	Military and Joint-Use Airports.	44
4.8.	Civil Airports.	44
4.9.	Volume Training.....	45
4.10.	UAS Airfields and Operations.	46
4.11.	Aviation Into-Plane Reimbursement Card (AIR CARD).....	46
4.11.	(AETC) Aviation Into-Plane Reimbursement Card (AIR CARD®) Responsibilities.	47
4.12.	Weather Information.	47
4.13.	Aeronautical Information and Publications.	48
4.14.	Area Navigation (RNAV) and Required Navigation Performance (RNP).	49
4.15.	IFR Flight.....	49
4.16.	VFR Flight.	52
4.17.	Flight Plans.	53
4.18.	Fuel Requirements.	54

4.19.	Preflight Briefings.....	55
Chapter 5— DEPARTURE		56
5.1.	Weather.....	56
5.2.	Turns after Takeoff.	56
5.3.	VFR Climb Performance.	57
5.3.	(AETC) VFR Climb Performance.	57
5.4.	IFR Climb Performance.....	57
5.5.	IFR Departure Methods.	58
Chapter 6— ENROUTE		61
6.1.	Airspace Clearance Authority.....	61
6.2.	Minimum Aircraft Altitude.....	61
6.3.	Aircraft Speed.	63
6.4.	Hazard Avoidance.....	64
6.5.	Flight in Extreme Barometric Pressures.	65
6.6.	Flight in Colder Than International Standard Atmosphere (ISA) Temperatures....	65
6.7.	Communications.	65
6.8.	RNAV and RNP Operations.	65
6.9.	Performance-Based Operations.	67
6.10.	Legacy Special Civil Airspace Requirements.....	67
6.11.	VFR Flight.	68
Table 6.1.	NAS VFR Cloud Clearance and Visibility Minimums (T-0).	68
Table 6.2.	ICAO VFR Cloud Clearance and Visibility Minimums (T-0).	69
Chapter 7— ARRIVAL		71
7.1.	Weather.....	71
Table 7.1.	Helicopter Use of Approach Procedures (T-0).	72
7.2.	Cold Weather Altitude Corrections.	72
Table 7.2.	Cold Weather Altitude Corrections (T-1).	73
7.3.	Types of Arrivals.	73
7.4.	Types of Approaches.	73

7.5.	Approach Minimums.	75
7.6.	Inoperative Approach Lighting System (ALS).	75
7.7.	Landing Gear Reporting Procedures.	75
7.8.	Missed Approach.	75
7.9.	Land and Hold Short Operations (LAHSO).	76
7.10.	Reduced Same Runway Separation (RSRS).	76
7.10.	(AETC) Reduced Same Runway Separation (RSRS).	76
7.11.	Helicopter Landing Areas.	76
7.12.	Landing With Hot Armament.	77
7.12.	(AETC) Landing with Hot Armament.	77
7.13.	Touch-and-Go Landings.	77
7.13.	(AETC) Touch-and-Go Landings.	77
7.14.	Turns after Touch-and-Go or Low Approach.	77
7.15.	Traffic Pattern Procedures.	77
7.16.	Practice Instrument Approaches Under VFR.	77
7.16.	(AETC) Practice Instrument Approaches Under VFR.	77
7.17.	Night VMC Approaches.	78
7.17.	(AETC) Night VMC Approaches.	78
Attachment 1— GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION		79
Attachment 2— IFR FILING DECISION TREE – FIXED-WING		96
Attachment 3— IFR FILING DECISION TREE - HELICOPTER		97
Attachment 4— DEPARTURE DECISION TREE		99
Attachment 5—(Added-AETC) STANDARDIZED AVIATION RISK MANAGEMENT TOOL		99
Attachment 6—(Added-AETC) AETC ELECTRONIC FLIGHT BAG (EFB) GUIDANCE AND PROCEDURES		101

Chapter 1

ROLES AND RESPONSIBILITIES

1.1. General.

1.1. (AETC) General. Associate Air Reserve Component (ARC) units with missions not related to the AETC mission see [paragraph 1.5](#).

1.1.1. **Pilot in Command Authority.** The Pilot in Command (PIC), regardless of rank, is responsible for, and is the final authority for the operation of the aircraft.

1.1.2. This AFI provides broad guidance and cannot address every situation. Aircrew will use best judgment to safely conduct flying operations.

1.1.3. Supplemental information to this AFI may be found in the AFMAN 11-217 series and applicable Major Command (MAJCOM) supplements.

1.1.4. This instruction is a common source of flight directives that includes:

1.1.4.1. Air Force guidance;

1.1.4.2. Title 14 Code of Federal Regulations (CFRs) and the Aeronautical Information Manual (AIM); and,

1.1.4.3. International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs).

1.1.5. Unmanned Aircraft System (UAS) or Remotely Piloted Aircraft (RPA) applicability.

1.1.5.1. Category 4 and 5 UAS operations shall follow this AFI; Category 1-3 ("Small") UAS shall be governed by AFI 11-502V3, *Small Unmanned Aircraft Systems Operations*. UAS categories are listed in AFI 11-502V3.

1.2. Waivers. Directive guidance (will, shall, must, etc.) throughout this regulation are tiered IAW AFI 33-360, *Publications and Forms Management*. For examples of waivers and waiver authorities, see AFI 33-360. HAF/A3 designates HAF/A35 as waiver authority on all Tier-0 and Tier-1 waivers.

1.2. (AETC) Waivers. Approved waivers for AETC can be found on the AETC/A3V SharePoint website (<https://eis.aetc.af.mil/hq/A23/A3V/default.aspx>). All approved AFRC waivers are listed on the AFRC/A3V website. All approved ANG waivers are listed on the NGB/A3O website. Aircrews are responsible for ensuring currency of waiver before operating under it.

1.2.1. **Waiver Process.** MAJCOMs (or subordinate units for T-2 and T-3 waivers) initiate and staff all waiver packages. Coordination through HQ AFFSA/XOF (hqaffsa.xof@us.af.mil) is required for Tier 0 and 1 waivers and is recommended for Tier 2 and 3 waivers. Once waiver is approved, MAJCOM Stan/Eval will send an informational copy to HQ AFFSA/XOF within 5 duty days. Verbal concurrence is not authorized for T-0 waivers. Verbal waivers for all other tiers is not recommended except in support of time-critical missions or circumstances; written documentation following verbal concurrence IAW AFI 33-360 will occur within 24 hours (T-1).

1.2.1.1. **Tier 0:** Annotated by “(T-0)”. Determined by respective non-AF authority (e.g. Congress, White House, Secretary of Defense, Joint Staff, etc.). The waiver authority is external to AF.

1.2.1.1.1. Coordination is required through HQ AFFSA/XOF for Tier 0 waivers. In most cases, HQ AFFSA/XOF will pursue external agency concurrence and provide results to MAJCOM (e.g. an Exemption to the CFRs granted by the Federal Aviation Administration (FAA) Administrator). MAJCOM/CC (delegable no lower than MAJCOM Director) issues waiver after MAJCOM obtains necessary non-AF authority permission and HAF/A35 concurrence.

1.2.1.1.1.1. When Host Nation (HN) concurrence is required, OCONUS MAJCOMs will coordinate Tier 0 waiver requests with the respective HN.

1.2.1.1.2. Tier 0 guidance may include FAA guidance from the CFRs or ICAO guidance from the SARPs.

1.2.1.2. **Tier 1:** Annotated by “(T-1)”. Non-compliance puts Airmen, commanders or the USAF strongly at risk of mission or program failure, death, injury, legal jeopardy or unacceptable fraud, waste or abuse.

1.2.1.2.1. MAJCOM Stan/Eval shall coordinate with HQ AFFSA/XOF when initiating Tier 1 waivers. MAJCOM/CC (delegable no lower than MAJCOM Director) issues waiver after MAJCOM obtains HAF/A3 concurrence (delegated to HAF/A35).

1.2.1.2.2. Tier 1 includes guidance that lends to standardization across all USAF wings and platforms.

1.2.1.3. **Tier 2:** Annotated by “(T-2)”. Non-compliance may degrade mission or program effectiveness or efficiency and has potential to create moderate risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste, or abuse.

1.2.1.3.1. MAJCOM Stan/Eval will request MAJCOM/CC (delegable no lower than MAJCOM/A3) approval for all Tier 2 waivers. Tier 2 waivers only apply within the approving MAJCOM.

1.2.1.3.2. Tier 2 guidance includes instruction that lends to standardization across MAJCOM-specific wings and platforms.

1.2.1.4. **Tier 3 :** Annotated by “(T-3)”. Non-compliance may limit mission or program effectiveness or efficiency and has a relatively remote potential to create risk of mission or program failure, injury, legal jeopardy or unacceptable fraud, waste, or abuse.

1.2.1.4.1. Wing commanders, delegable no lower than operations group commanders or equivalent, will initiate and approve Tier 3 waiver requests. Once approved, wings will send an informational copy to MAJCOM Stan/Eval and HQ AFFSA/XOF within 5 duty days.

1.2.1.4.2. Tier 3 guidance includes instruction that is limited to wing and installation specified rules that do not affect AF-level standardization.

1.2.2. For the purposes of this instruction, flying MAJCOMS are: ACC, AETC, AFDW, AFGSC, AFMC, AFRC, AFSOC, AMC, DIA, NGB, PACAF, and USAFE. Commanders

Air Force forces (COMAFFORs) in the grade of O-8 or higher in Combatant Commands (CCMDs) are considered MAJCOM commanders only for forces under their operational control.

1.2.3. MAJCOMs must obtain a waiver to AFI 33-360 if delegation to other “waiver authorities” than those listed in Table 1.1 of AFI 33-360 is desired.

1.2.4. Waivers should be submitted using AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval* or as directed in AFI 33-360.

1.2.4.1. **(Added-AETC)** Commanders will submit all higher headquarters waiver requests to AETC/A2/3/10 via the Task Management Tool (TMT). Waiver requests must be submitted on an AF Form 679 and provide justification why the individual or unit cannot comply with requirements. Units will file a copy of approved waivers according to AFI 33-360, Publications and Forms Management.

1.2.4.2. **(Added-AETC)** NGB/A3 and AFRC/A3 are the waiver authorities for their respective gained units. NGB and AFRC units will submit waiver requests IAW the appropriate MAJCOM procedures. Associate ANG and AFRC crews will request waivers through AETC channels to the AETC approval authority.

1.2.4.3. **(Added-AETC)** Units requesting Federal Aviation Administration (FAA) exemptions or authorizations will route requests (AF Form 679) via TMT through Stan/Eval channels to the appropriate NAF/A3/DO and AETC/A3, in turn, for MAJCOM endorsement. ANG units under AETC oversight will coordinate requests with AETC/A3V and forward to appropriate NAF/A3/DO and NGB/A3; AFRC units under AETC oversight will coordinate requests with AETC/A3V and forward to appropriate NAF/A3/DO and AFRC/A3V. AETC/A3V, AFRC/A3V, and NGB/A3O will submit MAJCOM-endorsed requests to AFFSA/XOF for coordination and processing.

1.3. Compliance. The PIC will ensure compliance with this AFI and the following (see Attachment 1 for related publications):

1.3.1. Air Force, MAJCOM, and Mission Design Series (MDS)-specific instructions;

1.3.2. Flight Information Publications (FLIP) and Foreign Clearance Guide (FCG);

1.3.3. Air Traffic Control (ATC) clearances;

1.3.4. Notices to Airmen (NOTAMs), aircraft technical orders; and,

1.3.5. Combatant Commander's instructions and other associated directives IAW the Air Component Commander's objectives.

1.4. Operational Prerogative of Military Aircraft. When operationally necessary, PICs are authorized to conduct military flight operations with due regard for the safety of navigation of civil traffic in international airspace IAW FLIP *General Planning* (GP). Except for pre-planned missions, PICs shall consider such operations in peacetime as a flight rule deviation and will comply with the reporting requirements in [paragraph 1.6](#). (T-0). MAJCOMs may authorize tactical operations for training and compliance with [paragraph 1.3](#).

1.5. MAJCOM Supplements. MAJCOM supplements shall not be less restrictive than this instruction and be IAW AFI 33-360. Submit supplements to HQ AFFSA/XOF (hqaffsa.xof@us.af.mil) for coordination prior to publishing.

1.5. (AETC) MAJCOM Supplements. Associate Air Reserve Component (ARC) units with missions not related to the AETC mission, will address policy and procedures in a local unit supplement. Before publication, ARC units will coordinate their supplements through their respective HHQ staffs.

1.5.1. Tier 0 and 1 waivers shall not be published in MAJCOM supplemental guidance.

1.5.2. **(Added-AETC)** AETC aircrews temporarily under the operational control of another MAJCOM will comply with that MAJCOM's directives.

1.5.3. **(Added-AETC)** Air Force requirements are expressed through the basic AFI and this supplement. In the absence of AETC-specific guidance, units will follow the mission design series (MDS)-specific guidance or AETC-approved lead command guidance.

1.5.4. **(Added-AETC)** For the 306th Flying Training Group (306 FTG) and 479 FTG, operations group stan/eval (OGV) refers to 306 FTG/FTGV and 479 FTG/FTGV.

1.6. Deviations. An ATC clearance is not authority to deviate from this instruction. A PIC may only deviate from this instruction, flight rule, or ATC clearance to protect life, for safety of flight, or when an in-flight emergency requires immediate action.

1.6.1. **Notification.** When deviating from an ATC clearance, notify ATC of the action taken as soon as possible.

1.6.2. **Post-Flight Actions.** In the event of a deviation from a flight rule and/or when given traffic priority by ATC in an emergency, the PIC will verbally report the incident to a supervisor and commander within 24 hours of the incident and shall make a detailed written record (T-0). The unit will keep a copy of the record for a minimum of 1 year from the date of the incident and be prepared to provide the record to the appropriate investigating authority if required (T-0).

1.7. Violations. A violation may result when a USAF aircraft deviates from flight rules. FAA ATC deviation reports involving a USAF aircraft are processed by the Air Force Representative to the FAA (AFREP) IAW AFI 13-201, *Airspace Management*. Air Force ATC deviation reports involving USAF aircraft are processed IAW AFI 91-202, *The US Air Force Mishap Prevention Program*. Violations that occur in the airspace of foreign nations are processed IAW the procedures of that nation.

1.7.1. For any alleged violation, utilize aircraft call-sign for any contact with ATC. Do not release names or personal information of crewmembers to non-USAF agencies without the permission of the AFREP in coordination with the MAJCOM/A3 or HQ USAF/A35.

1.7.2. If notified by an AFREP of a possible violation, MAJCOMs will preserve any available evidence for a minimum of 180 days and will contact the AFREP prior to disposal.

1.8. Aviation Safety Reporting. Potential hazards to aviation safety should be reported via the military Aviation Safety Action Program (ASAP) (www.safety-masap.com). Incidents involving damage to aircraft, personal injury, or intentional disregard of orders or instructions, whether reported to ASAP or not, shall be reported to a Flight Safety Officer (FSO) as soon as possible (T-0). Report hazardous air traffic events IAW AFMAN 91-223, *Aviation Safety Investigations and Reports*.

1.9. Airworthiness. For all issues concerning aircraft airworthiness certification, refer to AFI 62-601, *USAF Airworthiness*.

1.10. Communication, Navigation, Surveillance (CNS) Certification and Approval. USAF aircraft and aircrews must comply with the performance requirements and specifications appropriate for the route, procedure, and airspace unless exemptions or special procedures for non-equipped aircraft are granted (T-0).

1.10.1. **Unmanned Aircraft Systems** . See [paragraph 4.10](#).

1.10.2. **Operational Approvals** . MAJCOM CNS procedures and training should provide a level of performance and safety that is consistent with civil airspace standards. HQ AFFSA will assist MAJCOMs with Operational Approvals. Contact AFFSA/XON (hqaffsa.xon@us.af.mil) for capabilities that require specific operational approval.

1.10.2. **(AETC) Operational Approvals.** Units will follow guidance in the applicable AFI 11-2 MDS-specific, Volume 3, for use of Communications, Navigation and Surveillance (CNS) and navigation safety systems for their particular aircraft.

1.10.2.1. **Lead MAJCOM responsibilities:**

1.10.2.1.1. Provide training, instructions, procedures, and minimum equipment lists for CNS capabilities to operators and maintenance personnel.

1.10.2.1.2. Receive HQ USAF/A35 endorsement for operational approvals. Initiate endorsement through AFFSA/XON. MAJCOMs may utilize endorsement from other MAJCOMs for similar platforms.

1.10.2.1.2.1. If training, instructions, procedures, or minimum equipment lists differ from the lead MAJCOM, separate endorsement for operational approval from HQ USAF/A35 is required.

1.10.2.1.3. Provide detailed MDS-specific guidance authorizing aircrew to exercise CNS capabilities including approvals, qualifications, and any restrictions or prohibitions.

1.10.2.1.4. Ensure CNS capabilities are properly certified and operationally approved IAW AFI 63-137, *Assurance of Communications, Surveillance/Air Traffic Management (CNS/ATM), Navigation Safety, and Next Generation Air Transportation System (NextGen) Performance*. Also reference AFI 63-112, *Cockpit Working Groups*.

1.10.2.1.4. **(AETC)** Aircraft and equipment that have been certified by lead commands for operations are approved for use in AETC.

1.10.2.2. **AFFSA responsibilities:**

1.10.2.2.1. Assist MAJCOMs with identifying and defining CNS requirements and accomplishing operational approvals.

1.10.2.2.2. Review MAJCOM approvals for consistency with civil standards and for completeness of operational procedures, flight manuals, and directives prior to staffing for endorsement.

1.11. Primary Flight Reference (PFR). Any PFR used for instrument flight shall be considered for endorsement by HQ USAF/A35. Contact HQ AFFSA/XON (hqaffsa.xon@us.af.mil) for PFR endorsement process.

1.11.1. USAF aircraft cockpits and UAS control stations must always be capable of providing full-time attitude, altitude, airspeed information, and the capability to recognize, confirm, and recover from unusual attitudes in all pilot positions (T-1).

1.11.1.1. UAS control stations must also display at all times: link status, link availability, lost link indications, and logic information (autopilot control mode, primary route, and contingency route) (T-1). *Exception:* Contingency route may be immediately available if not displayed at all times.

1.11.1.2. Lead Commands will define display requirements for aircraft not certified or authorized for instrument flight (T-1).

1.11.1.2. (AETC) 306 FTG sailplanes may operate without an attitude indicator during day visual meteorological conditions (VMC) only when there is a discernible horizon.

1.11.2. MAJCOMs will issue guidance for configuration of pilot-selectable flight displays. In actual instrument meteorological conditions (IMC) or when there is no discernible visual horizon, an HQ USAF/A35-endorsed PFR shall be displayed in the pilot flying position.

1.11.2. (AETC) Aircrews will use guidance prescribed in the applicable AFI 11-2 MDS-specific volumes.

Chapter 2

FLIGHT READINESS

2.1. Crew Rest. Crew rest is compulsory for aircrew members prior to performing any duties involving aircraft operations and is a minimum of 12 non-duty hours before the Flight Duty Period (FDP) begins (T-2). Crew rest is free time and includes time for meals, transportation, and rest. This time must include an opportunity for at least 8 hours of uninterrupted sleep. Crew rest period cannot begin until after the completion of official duties.

2.1.1. Aircrew members are individually responsible to ensure they obtain sufficient rest during a crew rest period.

2.1.2. Once crew rest begins, any official business interrupts the crew rest period. If crew rest is interrupted, individuals will immediately inform appropriate leadership or command and control (C2) and will either begin a new crew rest period or not perform flight duties (T-2). **Exception:** PIC (or designee) may initiate mission-related communication with official agencies without interrupting crew rest.

2.1.3. **Exceptions to the 12-Hour Minimum Crew Rest Periods** . For continuous operations when basic aircrew FDPs are between 12 to 14 hours, subsequent crew rest may be reduced to a minimum of 10 hours by the PIC in order to maintain a 24-hour work/rest schedule (T-2). “Continuous operations” is defined as three or more consecutive FDPs of at least 12 hours duration with minimum crew rest period.

2.1.3.1. The 10-hour crew rest exception shall only be used to keep crews in 24-hour clock cycles, not for scheduling convenience or additional sortie generation (T-2).

2.1.3.2. Any reduction from 12-hour crew rest requires pre-coordination for transportation, meals, and quarters so that crewmembers are provided an opportunity for at least 8 hours of uninterrupted sleep (T-2).

2.1.3.3. **(Added-AETC)** Aircrew members must have a minimum of 24 hours of crew rest following 3 consecutive flight duty periods of 16 hours or more with minimum crew rest between flights.

2.1.4. **(Added-AETC)** When the same crew will fly together on subsequent sorties, crew rest for multi-place aircraft will not begin sooner than when the last crewmember leaves after completing assigned official duties.

2.1.5. **(Added-AETC)** Squadron operational supervisors (Ops Sups), supervisors of flying (SOFs), and runway supervisory unit (RSU) crews will meet normal crew rest requirements. **Exception:** AETC mobility unit Ops Sups must get at least 8 hours of crew rest. Squadron supervisors who are recalled to perform supervisory or SOF duties during an active flying tasking need not meet crew rest requirements for that duty. **They must obtain required crew rest before returning to normal duty.**

2.2. Flight Duty Period (FDP) (see [Table 2.1](#)). FDP may be waived by MAJCOM/A3 when an ORM assessment determines that mission requirements justify the increased risk. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

2.2. (AETC) Flight Duty Period (FDP). AETC/A2/3/10 delegates flight duty period (FDP) waiver authority to OG/CCs (or equivalent). See **Table 2.2 (Added)** for maximum flying time during the FDP.

2.2.1. FDP begins when an aircrew member reports for a mission, briefing, or other official duty and ends at final engine shutdown after the final flight of the completed mission. FDP for UAS aircrew member ends at final engine shutdown, final in-flight handover briefing, or final crew swap, whichever occurs last.

2.2.1. **(AETC)** For AFRC and ANG aircrews, the FDP includes both military duty and civilian work periods. It begins when the individual, military or civilian, reports for his or her first duty of the day. FDPs end at engine shutdown at the end of the mission or series of missions. Time spent in the completion of duties will not count as crew rest toward the next FDP.

2.2.2. When authorized by the waiver authority, the PIC may extend FDP a maximum of 2 hours to compensate for mission delays.

2.2.3. **(Added-AETC)** Single-seat fighters are limited to a maximum FDP of 10 hours when night operations are conducted (12 hours for dual-seat fighters with two qualified pilots on board).

2.2.4. **(Added-AETC)** Students in a formal course of training must complete all training events in the first 12 hours of the FDP.

2.2.5. **(Added-AETC)** Student training and dual continuation training sorties in T-6 and T-38 aircraft are limited to a maximum FDP of 10 hours when any portion of the training will occur at night. Following an appropriate risk assessment, OG/CCs may authorize up to 12 hours on a case by case basis.

2.2.6. **(Added-AETC)** Augmented crews require OG/CC approval to fly past a basic aircrew FDP (**Table 2.1**). To exceed a basic aircrew FDP, the crew must be designated an augmented crew at the beginning of the duty period and remain so designated for the entire duty period.

2.2.6.1. **(Added-AETC)** An augmented crew for T-6 and T-38 aircraft is defined as two qualified pilots (excluding pilot instructor training) flying together.

2.2.6.2. **(Added-AETC)** An augmented crew for the T-1 is defined as three qualified pilots or two instructor pilots (IPs) and a student pilot.

2.2.6.3. **(Added-AETC)** Augmented crews for airlift (C-5, C-130, EC-130, and C-17), operational support aircraft and tankers (KC-135) will refer to AFI 11-2 MDS-specific guidance.

2.2.6.4. **(Added-AETC)** Augmented crews are not authorized for fighter or attack aircraft.

2.3. Post-Flight Duties. If official post-flight duties are anticipated to exceed 2 hours, commanders should consider reducing the FDP to ensure the safe completion of those duties.

Table 2.1. Maximum FDP (Hours).

--	--	--

Aircraft Type	Basic Aircrew	Augmented Aircrew
Single Piloted Aircraft	12	NA
Fighter, Attack or Trainer (Dual Control)	12	16
Bomber, Reconnaissance, Electronic Warfare, or Battle Management (Dual Control)	16	24
Tanker/Transport	16	NA
Tanker/Transport with Sleeping Provisions ¹	16	24
Rotary Wing (without Auto Flight Control System)	12	14
Rotary Wing (with Auto Flight Control System)	14	18
Utility	12	18
Unmanned Aircraft System (Single Control)	12	NA
Unmanned Aircraft System (Dual Control)	16	NA
Tilt-rotor	16	NA
NOTE 1: Sleeping provisions are crew bunks or other MAJCOM-defined rest facilities aboard the aircraft. Rest facilities should provide adequate privacy and noise levels to obtain suitable rest.		

Table 2.2. (Added-AETC) Maximum Flying Times (Includes Simulator Time).

I	A	B	C	D
T				
E				
M	Aircraft	Flying Time During Flight Duty Period	Flying Hours Per 7 Consecutive Days	Flying Hours Per 30 Consecutive Days
1	C-5, C-17, C-21, C-130, KC-135, and KC-46	12 hours total (Note 1)	50 (Note 1)	125
2	F-15, F-16, and F-35	8 hours total; 5 hours instructional	30 (Note 3)	75 (Note 3)
3	UH-1N	12 hours total	50 (Note 1)	125
4	HH-60	16 hours augmented crew; 14 hours total (12 hours without operational automated flight control system [AFCS]); 12 hours instructional or FCF		
5	H/MC-130H/J/P (Note 4)	16 hours total; 12 hours tactical, FCF or inoperative autopilot		
6	CV-22	16 hours augmented crew; 14 hours total (12 hours without operational AFCS); 12		

		hours instructional or FCF		
7	T-1 (Note 5)	8 hours total; 6.5 hours instructional	45 (Note 3)	90 (Note 3)
8	TH-1N (Note 5)	8 hours total; 6.5 hours instructional		
9	T-6 (Note 5)	8 total hours; 5.5 hours instructional or FCF	30 (Note 3)	75 (Note 3)
10	T-38 (Note 6)	6.5 total hours; 5 hours FCF or 4.5 hours instructional		

Notes:

1. See AFI 11-2 MDS-specific guidance for operational missions.
2. The maximum flying time for fighter aircrew is 200 hours per calendar quarter.
3. The OG/CC may waive the 7-day maximum time on a case-by-case basis. (T-3) For weapon systems for which the 30-day maximum time is less than 125 hours, OG/CC may also waive the 30-day maximum time (up to 125 hours). (T-3)
4. Basic FDP is 16 hours providing no mission events, air refueling events or HAR below 3,000 feet AGL, pilot proficiency training, or FCFs are accomplished after 12 hours and no air refueling events or HAR at or above 3,000 feet AGL are accomplished after 14 hours. The augmented FDP is 20 hours providing no mission events, air refueling events or HAR below 3,000 feet AGL, pilot proficiency training, or FCFs are accomplished after 16 hours and no air refueling events or HAR at or above 3,000 feet AGL are accomplished after 18 hours. If the autopilot is not operational or its use is denied for more than 4 hours (8 hours for augmented crew), the FDP will be 12 hours (16 hours for augmented crew) (the use of altitude hold does not constitute use of an autopilot). If the autopilot fails after departure, continue to the next scheduled stop and then comply with FDP limitations.
5. The maximum flying and simulator time during the flight duty period is 8 hours, but the last 1.5 hours cannot be flown as an IP on an instructional flight. Aircrews may fly any combination as long as they do not exceed the respective maximums.
6. The maximum flying and simulator time during the flight duty period is 6.5 total hours, but the last 1.5 hours may not be flown as an IP on a student flight. Aircrews may fly any combination if they do not exceed the respective maximums.

2.4. Deadhead Time. Deadhead time is an official duty performed by an aircrew member flying as a passenger (no flight-related duties performed) while on flight orders and may be flown without crew rest.

- 2.4.1. If flight-related duties are planned to be performed following deadheading, crew rest and FDP restrictions apply (T-2).

2.4.2. If in-flight or crew-specialty related duties (e.g., aircraft off-loading or performance data calculations) are performed in conjunction with deadheading, crew rest and FDP restrictions apply (T-2).

2.4.3. Deadhead crewmembers will be annotated as Mission Essential Personnel (MEP) on the Flight Authorization IAW AFI 11-401, Aviation Management (T-1).

2.5. Alert Duty. MAJCOMs establish alert and compensatory periods in keeping with mission requirements and risk management (RM).

2.6. Maximum Flying Time . Maximum flying time is 56 flight hours per 7 consecutive days, 125 flight hours per 30 consecutive days, and 330 flight hours per 90 consecutive days.

2.6.1. Maximum flying time may be waived by MAJCOM/A3 when an ORM assessment determines that mission requirements justify the increased risk. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

2.6.1. (AETC) AETC/A2/3/10 delegates this waiver authority to the OG/CC (or equivalent).

2.7. Flight Readiness Limitations .

2.7.1. Aircrew members will not fly:

2.7.1.1. Anytime the crewmember has not obtained the appropriate crew rest IAW [paragraph 2.1](#). (T-2).

2.7.1.2. If any alcohol is consumed within 12 hours prior to takeoff (or assuming aircraft control for UAS) or if impaired by alcohol or any other intoxicating substance, to include the effects or after-effects (T-0).

2.7.1.3. Anytime a physical or psychological condition is suspected or known to be detrimental to the safe performance of flight duty. Consult a flight surgeon at the earliest opportunity.

2.7.1.4. While self-medicating, except IAW the “Official Air Force Aerospace Medicine Approved Medications” found in AFI 48-123, *Medical Examinations & Standards* (T-1).

2.7.1.5. Within 24 hours of compressed gas diving including SCUBA, surface supplied diving, hyperbaric (compression) chamber exposure, or aircraft pressurization checks exceeding 10 minutes in duration below sea level; these restrictions not applicable to UAS flight operations (T-1). **Exceptions:** Following Helicopter Emergency Egress Device System (HEEDS) training, aircrew may only fly within the 24-hour window if the aircraft’s maximum altitude remains below 10,000 ft. MSL. Air Force divers on aeronautical orders will follow guidelines IAW SS521-AG-PRO-010 U.S. Navy Diving Manual for flying and diving restrictions (T-1).

2.7.1.6. Within 12 hours after completion of a hypobaric (altitude) chamber flight above 25,000 ft. mean sea level (MSL) (T-1). Personnel may fly as passengers in aircraft during this period provided the planned mission will maintain a cabin altitude of 10,000 ft. MSL or less. For altitude chamber flights to a maximum altitude of 25,000 ft. MSL or below, aircrew members may fly without restriction as crewmembers or passengers if cabin altitude is not planned to exceed 15,000 ft. MSL (this restriction not applicable to UAS

flight operations). There are no restrictions following Reduced Oxygen Breathing Device (ROBD) training.

2.7.1.7. Within 72 hours after donating blood, plasma, or bone marrow (T-1).

2.7.2. **Medical.** Aircrew members must maintain a medical clearance from the flight surgeon to perform in-flight duties (T-1). Medical or dental treatment obtained from any source must be cleared by a flight surgeon prior to reporting for flight duty (T-1).

2.7.2.1. Use of any medication or dietary supplements is governed by AFI 48-123 and as approved by a flight surgeon. Aircrew members will not normally self-medicate (T-1). In the absence of other MAJCOM guidance, the following is a partial list of medications that may be used without medical consultation:

2.7.2.1.1. Single doses of over-the-counter (OTC) aspirin, acetaminophen, ibuprofen to provide analgesia for minor self-limiting conditions.

2.7.2.1.2. OTC skin antiseptics, topical anti-fungals, 1% hydrocortisone cream, or benzoyl peroxide for minor wounds and skin diseases which do not hinder flying duties or wear of personal protective equipment.

2.7.2.1.3. OTC antacids for mild isolated episodes of indigestion.

2.7.2.1.4. OTC hemorrhoidal suppositories.

2.7.2.1.5. OTC bismuth subsalicylate for mild cases of diarrhea.

2.7.2.1.6. OTC oxymetazoline or phenylephrine nasal sprays may be carried should unexpected ear or sinus block occur during flight. Aircrew may only use such sprays as “get me downs.” Do not use to treat head symptoms prior to flight.

2.7.3. **(Added-AETC)** Aircrew members that transit more than 4 time zones for any reason should not perform flight duties within 48 hours after arrival at their destination. When on higher headquarters missions, units with C-130, HC/MC-130, C-5, C-17, and KC-135 aircraft will follow crew rest requirements in the applicable AFI 11-2 MDS-specific guidance.

2.7.4. **(Added-AETC)** Fighter aircrew are limited to three daytime sorties per FDP or two sorties if one sortie is flown at night.

2.7.5. **(Added-AETC)** T-6 and T-38 Undergraduate Flying Training (UFT), Pilot Instructor Training (PIT), Introduction to Fighter Fundamentals (IFF) and Euro-NATO Joint Jet Pilot Training (ENJJPT) instructors will not fly a night checkout sortie or night syllabus sortie as the third flight-related activity of the duty day. T-1 and TH-1 instructors may fly a third student event but not a fourth at night. (**Note:** More than one student event may be logged on one T-1 or TH-1 sortie [for example, one IP flying two student syllabus events on one aircraft sortie may log two student events.]) Flight-related activities include: student/theater indoctrination (TI) sortie, RSU tour, SOF tour, or simulator mission. IPs will not conduct student training or act as pilot in command (PIC) during night operations until they have completed the local night checkout. (T-3) The OG/CC may waive this restriction on a case-by-case basis.

2.8. Alertness Management and Fatigue Mitigation. MAJCOMs will provide guidance to address aircrew alertness and fatigue management.

2.8. (AETC) Alertness Management and Fatigue Mitigation. Commanders, mission planners, aerospace medicine personnel and PICs must continually execute RM assessments and implement alertness management strategies such as: extending crew rest periods, pre-positioning crews, using sleep quarantine facilities, non-pharmacological countermeasures such as controlled cockpit rest, bright light or physical activity breaks; and fatigue management education and training. To combat cumulative fatigue, commanders should grant additional crew rest, or limit consecutive duty days, during surge, max-effort, or operations near maximum FDPs.

2.8.1. Fatigue Countermeasure Medications. MAJCOMs will provide guidance on the use of go and no-go medications IAW AF/SG policy.

2.8.1. (AETC) Fatigue Countermeasure Medications . Use of go and no-go medications is prohibited on AETC missions.

2.8.2. Controlled Cockpit Rest. Controlled cockpit rest may be implemented when the basic aircrew includes a second qualified pilot. All cockpit crewmembers must remain at their stations (T-0). Cockpit rest will be taken by only one crewmember (per crew position, as applicable) at a time, must be restricted to non-critical phases of flight during cruise, terminate one hour prior to planned descent, and should be limited to 45 minutes per rest period (T-2). More than one rest period per crewmember is permitted. Cockpit rest is not authorized when aircraft system malfunctions increase cockpit workload (e.g., autopilot, navigation systems) (T-1). The resting crewmember must be awakened immediately if a situation develops that affects flight safety (T-1). Cockpit rest shall not be a substitute for any required crew rest (T-1).

2.8.3. Flight publications describe procedures for loss of pressurization, oxygen, cockpit temperature control, inoperative autopilot, and other in-flight malfunctions or emergencies that restrict flight duration and contribute to aircrew fatigue. Such limitations within flight publications take precedence over less restrictive standards in this instruction.

2.9. Aircrew Flight and Survival Equipment. Wear and use authorized clothing and equipment IAW AFI 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program*; AFI 16-1301, *Survival, Evasion, Resistance and Escape (SERE) Program*; MAJCOM or wing guidance; Special Instructions (SPINS); the aircraft technical order (T.O.); and AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel* (T-1).

2.9.1. Spectacles. Crewmembers who require corrective spectacles while performing aircrew duties must only use Air Force-provided spectacles as outlined in AFI 48-123, *Medical Examinations and Standards* (T-1). Crewmembers must also carry a spare set of clear Air Force-provided spectacles while performing aircrew duties (T-1).

2.9.2. Sunglasses. Consult AFI 48-123, *Medical Examinations and Standards*, to determine the types of sunglasses approved for flight (T-1).

2.9.2. (AETC) Sunglasses. Individuals are authorized two pair of Air Force-provided sunglasses every two years, obtained through individual equipment supply processes.

2.9.3. Contact Lenses. Crewmembers who desire contact lenses must consult a flight surgeon, meet criteria, and follow guidelines outlined in AFI 48-123, *Medical Examinations and Standards* (T-1). While performing aircrew duty, comply with [paragraph 2.9.1](#).

2.9.4. **Laser Eye Protection.** MAJCOMs that permit aircrew laser eye protection will publish specific guidance on training and use prior to in-flight use. Aircrew will follow AFI 11-301, Volume 4, *Aircrew Laser Eye Protection (ALEP)*, when potential laser hazards exists.

2.9.4. **(AETC) Laser Eye Protection.** Aircrews will follow lead MAJCOM guidance as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus.

2.9.5. **Night Vision Devices (NVDs).** Crewmembers must undergo a MAJCOM-approved initial certification course IAW AFI 11-202, Volume 1, *Aircrew Training*, prior to their initial flight with NVDs (T-1). If wearing clear spectacles, contact lenses, or laser eye protection with NVDs, conduct preflight adjustments wearing both (T-1).

2.9.5. **(AETC) Night Vision Devices (NVDs).** Aircrews will follow lead MAJCOM guidance and training for the use of NVDs as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus.

2.9.6. **Flashlights** (N/A for UAS). Each crewmember must have an operable flashlight for night operations (T-2).

2.9.7. **(Added-AETC) Seatbelts.** In the absence of AFI 11-2 MDS-specific guidance, the following requirements apply:

2.9.7.1. **(Added-AETC)** Each occupant over 2 years of age will have an approved seat equipped with a seat belt. (T-0)

2.9.7.2. **(Added-AETC)** Occupants must wear a shoulder harness (if installed) with the seat belt during takeoff and landing. (T-0)

2.9.7.3. **(Added-AETC)** Gunner belts are approved for crew in the cabin of rotary wing aircraft.

2.9.7.4. **(Added-AETC)** Each occupant should wear a seat belt when seated during flight to avoid possible injury due to sudden turbulence.

2.9.7.5. **(Added-AETC)** As an additional precaution, aircraft occupants will wear a seatbelt as follows:

2.9.7.5.1. **(Added-AETC)** When directed by the PIC. (T-0)

2.9.7.5.2. **(Added-AETC)** During taxi and for all takeoffs and landings. (T-0)

2.9.7.5.3. **(Added-AETC)** When seated in an ejection seat.

2.9.7.5.4. **(Added-AETC)** When in the cockpit of non-ejection seat aircraft in flight.

Note: Instructors or evaluators may unbuckle only when performing their duty.

Chapter 3

GENERAL FLIGHT RULES

3.1. Professional Flying Standards.

3.1.1. **Reckless Flying.** The PIC is responsible for ensuring the aircraft is not operated in a careless, reckless, or irresponsible manner that could endanger life or property (T-0).

3.1.2. **Unauthorized Flight Demonstrations.** Unauthorized or impromptu flight demonstrations, maneuvers, events, or “fly-bys” are prohibited. AFI 11-209, *Aerial Event Policy and Procedures*, addresses authorized flight demonstrations (T-1).

3.2. Nonrated Flyers. Flying unit commanders must ensure nonrated personnel and civilians who perform in-flight duties receive an indoctrination course on MDS-specific missions, egress, emergency procedures, and use of flight and emergency equipment (T-1). A preflight briefing does not qualify as an indoctrination course.

3.3. Transporting Passengers Under the Influence. Ensure personnel suspected to be under the influence of intoxicants or narcotics are not allowed to board a USAF aircraft except in an emergency or when authorized by command and control authority (T-0).

3.4. Tobacco Use. Tobacco use in all forms, including electronic nicotine delivery systems, is prohibited on all aircraft (T-1).

3.5. Transport of Drugs. Do not allow the transport of narcotics, controlled substances, or other dangerous drugs unless such transport has been approved by a US Military, Federal, or State authority (T-0).

3.6. Hazardous Cargo. Ensure compliance with AFJI 11-204, *Operational Procedures For Aircraft Carrying Hazardous Material* (T-1).

3.7. Flight Displays. Comply with MAJCOM or MDS-specific guidance for configuration of pilot-selectable flight displays.

3.7. (AETC) Flight Displays. Aircrews will use guidance prescribed in the applicable AFI 11-2 MDS-specific volumes.

3.8. Authorized Resources for Flight and Mission Related Duties. Conduct flight and mission-related duties with MAJCOM-approved devices and resources. MAJCOMs will establish policy on the use of personal, public, or non-DoD resources for flight and mission duties (e.g. personally-owned devices, non-DoD networks, commercial websites, etc.).

3.8. (AETC) Authorized Resources for Flight and Mission Related Duties. Aircrew members will attempt to use official Air Force provided websites and hardware as a first choice. If not available use US Government provided websites when possible. Aircrew members assume all responsibility for data verification when utilizing commercial planning websites or infrastructure. Required weather briefings will be in accordance with [paragraph 4.12.1](#).

3.8.1. **(Added-AETC)** Electronic Flight Bag (EFB) devices (hardware and software) will follow lead command guidance for each MDS. For aircraft where AETC is lead command, EFB hardware and software will be in accordance with [Attachment 6](#).

3.8.2. **(Added-AETC)** Aircrews will not use personally procured devices or software inflight or for mission planning duties.

3.9. Portable Electronic Devices (PEDs). The PIC will prohibit the use of any PED suspected of creating interference with systems on the aircraft (T-0).

3.9. (AETC) Portable Electronic Devices (PEDs). If interference is suspected report time, duration, and software application being used to the AETC EFB Office via email upon landing.

3.9.1. **Non-Transmitting PEDs.** The following may be used at any time or altitude: portable voice recorders, hearing aids, heart pacemakers, electric shavers, calculators, watches, or any other portable electronic device authorized by the MAJCOM (in coordination with the MDS Systems Program Office (SPO)).

3.9.2. **Transmitting PEDs .** MAJCOM/A3 (in coordination with the MDS SPO) may authorize use of PEDs at any altitude with transmitters ON or OFF. In the absence of MAJCOM guidance, the PIC may authorize use of PEDs at or above 10,000 ft. MSL with transmitter OFF (e.g. Airplane Mode).

3.9.2. **(AETC) Transmitting PEDs .** See [Attachment 6](#) for PEDs on AETC aircraft.

3.9.3. **PED Connection to Aircraft.** MAJCOMs may authorize electrical connection of PEDs to aircraft power, data, or antennae with aircraft Program Manager approval. MAJCOMs will provide any applicable restrictions.

3.9.3. **(AETC) PED Connection to Aircraft.** See [Attachment 6](#) for connecting PEDs to aircraft power.

3.9.4. **PEDs used for Flight or Mission Duties.**

3.9.4.1. Information displayed on PEDs used to facilitate operation of the aircraft (e.g. Tech Orders, takeoff and landing data (TOLD)) will only be used as approved IAW AFI 11-215, *USAF Flight Manuals Program (FMP)* (T-1).

3.9.4.2. PEDs used to facilitate execution of the mission (e.g. portable electronic flight bags, portable Global Positioning System (GPS) units) will only be used as authorized by the MAJCOM. MAJCOMs (in coordination with the MDS SPO) will evaluate PEDs to minimize risks associated with mission completion, safety, and security.

3.9.4.2. **(AETC)** EFBs approved for use by AETC aircrews will be listed on the AETC/A3V SharePoint Team Site. Initial approval will be published via FCIF. See [Attachment 6](#) for EFB Policy.

3.9.4.3. MAJCOMs (in coordination with the MDS SPO), will publish guidance on use of personally-owned hardware or software.

3.9.4.3. **(AETC)** Personally owned hardware or software will not be used for flight duties. At no time will Technical Order information be stored on a personally owned device IAW AFI 61-204.

3.9.5. **Photo and Video Recording Devices.** Pilot use of handheld photo or video recording devices is prohibited when that pilot is the only one with immediate access to the flight controls (T-3).

3.9.5. (AETC) Photo and Video Recording Devices. Waiver authority for pilot use of handheld photo or video recording devices when that pilot is the only one with immediate access to the flight controls is elevated to AETC/A2/3/10.

3.9.5.1. **(Added-AETC)** OG/CC approval is required before using helmet-mounted or cockpit mounted photo or video recording devices in single-seat aircraft or any photo or video recording devices in the cockpit of other than single-seat aircraft. Individuals authorized to use hand-held photo or video recording devices will not actively control the aircraft.

3.9.5.2. **(Added-AETC)** Aircraft commander approval is required before the use of photo or video recording devices in the aircraft cargo or student compartment.

3.9.6. Medical Equipment. Normally, only medical equipment referenced in the aircraft flight manual, MDS-specific instruction, or listed in the Air Force Medical Logistics website is permitted. See <https://medlog.us.af.mil/>

3.10. Aircraft Movement on the Ground. Comply with AFI 11-218, *Aircraft Operations and Movement on the Ground*, and locally published procedures (T-1).

3.10.1. **Clearances.** Obtain clearance from ATC before taxiing, proceeding onto a runway, takeoff or landing at an airport with an operating control tower (T-0). Precisely read back all taxi and hold short instructions (T-0). If a taxi route requires crossing any runway, hold short until obtaining specific clearance to cross each runway (T-0). Do not taxi across or onto the assigned runway without clearance from ATC (T-0).

3.10.2. **Surface Movement Guidance and Control System (SMGCS).** Obtain MAJCOM-directed training and certification before participating in SMGCS taxi operations (T-0). MAJCOMs shall publish MDS-specific guidance for aircrew required to operate at SMGCS locations in low visibility. See AFI 11-218 for further guidance.

3.10.2. **(AETC) Surface Movement Guidance and Control System (SMGCS).** Aircrews will use guidance prescribed in the applicable AFI 11-2 MDS-specific volumes.

3.11. Crew at Stations. Crewmembers must occupy their assigned duty stations from takeoff to landing unless absence is normal in the performance of crew duties or in connection with physiological needs (T-0). Pilots shall not leave their duty station unless another qualified pilot establishes control of the aircraft (T-0).

3.12. Sterile Cockpit. In the absence of MAJCOM guidance, aircrew of fixed-wing aircraft shall minimize non-essential cockpit conversations and other extraneous activities which could interfere with flight duties when below 10,000 ft. MSL, during critical phases of flight, and during all taxi operations.

3.13. Inflight Reporting. See also AFI 10-206, *Operational Reporting*.

3.13.1. **Flight Safety Conditions.** Immediately report hazardous weather conditions, wake turbulence, volcanic activity, large concentrations of birds or wildlife on or near the airfield, or any other significant flight condition that may affect aviation safety to the appropriate controlling agency (T-1). See pilot report (PIREP) procedures in the *Flight Information Handbook* (FIH).

3.13.2. **Minimum or Emergency Fuel Advisory.** Declare “minimum fuel” or “emergency fuel” to the appropriate controlling agency when the aircraft may land at the intended destination with less than the MDS-specific minimum or emergency fuel reserves.

3.13.3. **Position Reports.** Report position as requested by ATC, host-nation procedures, or ICAO procedures (T-0). See IFR Supplement for position report format.

3.13.4. **Hazardous Laser Activity.** Report any hazardous laser activity. Reference AFI 11-301V4, *Aircrew Laser Eye Protection (ALEP)*, for specific actions (T-1).

3.13.5. **Electromagnetic Interference.** Report any electromagnetic interference IAW Joint Spectrum Interference Resolution (JSIR) procedures in the FIH and AFI 10-707, *Spectrum Interference Resolution Program* (T-1).

3.14. Oxygen and Pressurization Requirements (N/A for UAS).

3.14.1. **Oxygen.** Ensure sufficient oxygen for the planned mission is available to all occupants before takeoff (T-0). Normally, aircrew will use supplemental oxygen any time the cabin altitude exceeds 10,000 ft. MSL.

3.14.2. **Unpressurized Operations.** When mission essential, aircrew trained IAW AFI 11-403, *Aerospace Physiological Training Program*, may operate aircraft unpressurized up to Flight Level (FL) 250 IAW MAJCOM guidance and the following restrictions (T-1):

3.14.2.1. Without supplemental oxygen :

3.14.2.1.1. Altitude is limited to 14,000 ft. MSL (T-0).

3.14.2.1.2. Flight time between 10,000 and 12,500 ft. MSL is unrestricted, but shall not exceed 1 hour if any portion of the flight is conducted in IMC, at night (with or without NVDs), while employing weapons, conducting airdrop, air-refueling, or if performing high-g maneuvers (T-1).

3.14.2.1.2. (AETC) Total flight time between 10,000 and 12,500 feet MSL will not exceed 30 minutes when flight profiles include maneuvers that place high physical and physiological demands on crew members (for example, aerobatics and spins).

3.14.2.1.3. Flight time between 12,500 and 14,000 ft. MSL shall not exceed 30 minutes (T-0).

3.14.2.1.4. If any occupant is not trained IAW AFI 11-403, altitude and flight time are limited to 13,000 ft MSL and 3 hours, but shall not exceed the limits in [paragraphs 3.14.2.1.2](#) and [3.14.2.1.3](#) (T-1).

3.14.2.2. Supplemental oxygen must be used by all occupants between 14,000 ft. MSL and FL250. Do not exceed FL250 unless occupants are wearing functional pressure suits (see paragraph 3.14.7) (T-1).

3.14.3. **Pressurized Operations.** Pilots flying pressurized operations will normally maintain a cabin altitude below 10,000 ft. and comply with the supplemental oxygen requirements in [Table 3.1](#). (T-1). If cabin altitude is between 10,000 ft. MSL and FL250, comply with [paragraph 3.14.2](#) (T-1).

Table 3.1. Oxygen Requirements for Pressurized Aircraft.

	Pilot(s) ¹	Cockpit Crew ²	Other Flight Deck Crew	Cabin/Cargo Area Crew	Pax
10,000 ft. through FL 250	R	R	R	A	NA
Above FL 250 to FL 350	One I/One R	R	R	A	A
Above FL 350 to FL 410 (two pilots at controls)	I	R	R	A	A
Above FL 350 to FL 410 (one pilot at controls)	One O/One A	I	R	A	A
Above FL 410 to FL 450	One O/ One I	I	R	A	A
Above FL 450 to FL 500	One O/ One I	I	I	A	A
Above FL 500 to FL 600	G	G	G	G	G
Above FL 500 (Sustained)	S	S	S	S	S
NOTE 1: Single-pilot aircraft must follow the most restrictive guidance in this table.					
NOTE 2: Cockpit crew is defined as those crew positions with access to flight controls or responsibility for flight engineer panel, communication, or navigation systems.					
LEGEND:					
A - Oxygen available. Carry or place portable oxygen units or extra oxygen outlets with masks throughout the cabin/cargo area so that any person has quick access to oxygen should a loss of pressurization occur					
R - Oxygen readily available. A functioning system and mask shall be located within arm's reach, and the regulator must be set to 100 percent and ON (when regulator is adjustable).					
I – Oxygen immediately available. Must wear helmets with an oxygen mask attached to one side, or have available an approved quick-don style mask properly adjusted and positioned. Regulators shall be set to 100 percent and ON.					
O - Oxygen mask ON. Regulator ON and normal.					
G - Wear a partial pressure suit. Suit must provide 70mm Hg of assisted positive pressure breathing for altitude (pressure breathing for altitude system/get-me-down scenario).					
S-Wear a pressure suit. Suit must provide a total pressure (atmospheric plus suit differential) of at least 141 mm Hg to the head and neck with adequate body coverage to prevent edema and embolism.					

3.14.4. Procedures for Loss of Cabin Pressure. Initiate an immediate descent to the lowest practical altitude, preferably below 18,000 ft. MSL. Do not allow cabin altitude to remain above FL250 unless occupants are wearing functional pressure suits. If any occupant lacks functioning oxygen equipment, descend to an altitude of 13,000 ft. MSL or less (terrain or fuel requirements permitting) and comply with [paragraph 3.14.2](#).

3.14.4.1. If cabin altitude exceeds 18,000 ft. MSL following the unintended loss of cabin pressure, aircrew and passengers must be evaluated by a flight surgeon or other aviation medical authority prior to further flight (T-1). If cabin altitude cannot be determined, use

the aircraft altitude at the time of the event. Report a loss of cabin pressurization IAW AFMAN 91-223.

3.14.5. Decompression Sickness (DCS). If any occupant exhibits DCS symptoms, descend as soon as practical and land at the nearest suitable installation where medical assistance can be obtained. Individuals suspected of DCS shall be administered and remain on 100% oxygen (using tight-fitting mask or equivalent) until evaluated by an aviation medical authority. Decompression sickness may occur up to 12 hours after landing. Aircrew will not fly after a DCS event without specific authorization from a flight surgeon (T-1).

3.14.6. Hypoxia. If anyone on the aircraft experiences hypoxia symptoms, descend immediately to the lowest practical altitude and land at a suitable location to obtain medical assistance. Aircrew will not fly after a hypoxia event without specific authorization from a flight surgeon (T-1). For hypoxia symptoms caused by an On-Board Oxygen Generation System (OBOGS), follow MDS-specific guidance.

3.14.7. High Altitude Operations. Without functional pressure suits, maintain a cabin altitude below FL250 and adhere to the time limits in Table 3.2. (T-1). For high-altitude airdrop missions, use the oxygen requirements in AFI 11-409, *High Altitude Airdrop Mission Support Procedures*. If the aircraft lands between missions and the time on the ground equals or exceeds the time spent at or above a cabin altitude of FL210, the time of allowable duration can be reset to the maximum (T-1).

Table 3.2. Cabin Altitude Time Limits (DCS Prevention) (N/A for U-2 Operations).

Time (minutes)	Cabin Altitude (ft. MSL)
0	At or Above FL 250
45	24,000 – 24,999
70	23,000 – 23,999
120	22,000 – 22,999
200	21,000 – 21,999

3.15. Aircraft Lighting. Operate aircraft lighting according to the following guidance or IAW host-nation rules and theater SPINS (T-0):

3.15.1. Position Lights. Illuminate position lights (one per side minimum) between official sunset and sunrise (T-0); and,

3.15.1.1. When an engine is starting or running. Aircraft that do not have power available before start shall turn them on as soon as power is available (T-0); or,

3.15.1.2. While being towed, or when parked in an area likely to create a hazard, unless clearly illuminated by an outside source (T-0).

3.15.2. Anti-collision or Strobe Lights. If equipped, turn anti-collision or strobe lights on from just prior to engine start until engine shutdown (T-0).

3.15.2.1. Aircraft that do not have power available before engine start shall turn anti-collision or strobe lights on as soon as power is available (T-0).

3.15.2.2. Flashing lights may be switched off or reduced in intensity if they adversely affect the performance of duties, or subject an outside observer to harmful glare (T-0).

3.15.3. **Landing Lights.** If equipped, landing lights should be turned on when takeoff clearance is received, when commencing takeoff roll at an airport without an operating control tower, or when operating below 10,000 ft. MSL within normal MDS-specific operating procedures. Unless safety or mission dictates, use landing lights when on an active runway (e.g., taxi exercise, taxiing onto a runway, or specific instructions).

3.15.4. **Reduced Aircraft Lighting.** MAJCOMs may authorize reduced or lights-out operations in restricted areas, warning areas, host-nation approved areas, or designated airfields. Designated airfields shall be documented in a Letter of Agreement (LOA) (T-1).

3.15.4. **(AETC) Reduced Aircraft Lighting.** AETC/A3 authorizes reduced or light-out operations in restricted areas, warning areas, host-nation approved areas, or designated airfields. Units conducting operations under this authorization are responsible for initiating and maintaining letters of agreement (LOA) with designated airfields. Reduced or light-out operations must be conducted IAW applicable lead MAJCOM operational guidance and procedures. Aircrews are responsible for effectively managing the risk associated with reduced or light-out operations through the RM process.

3.16. Airfield Lighting.

3.16.1. Fixed-wing operations at night :

3.16.1.1. Must comply with MDS-specific operating instructions, including comprehensive risk management (RM) measures (such as infrared (IR) lighting requirements, NVD usage, non-participating aircraft procedures, NOTAM issuance, weather and lunar illumination requirements and RM assessments) (T-2).

3.16.1.1.1. In the absence of MDS-specific operating instructions, do not conduct operations from a runway unless it is outlined with operable lighting or high-intensity runway reflective markers and is clearly discernible (T-2).

3.16.1.1.1. **(AETC)** AETC/A3 authorizes AETC fixed-wing aircraft conducting training for NVD missions to operate into and from runways or landing zones not outlined with operating lights or covert IR lighting under the following conditions:

3.16.1.1.1.1. **(Added-AETC)** Operations must be in accordance with an approved syllabus.

3.16.1.1.1.2. **(Added-AETC)** Students accomplishing training to unlit landing zones or runways are following on to a MAJCOM that authorizes the procedures.

3.16.1.1.1.3. **(Added-AETC)** IPs accomplishing training to unlit landing zones or runways must have previous experience in these operations.

3.16.1.1.1.4. **(Added-AETC)** Units conducting operations under this authorization are responsible for initiating and maintaining LOAs with designated airfields.

3.16.1.2. Are restricted to military airfields or civilian airports with an appropriate LOA during non-contingency operations from unlighted runways or landing zones (or those using high-intensity runway reflective markers) (T-0).

3.16.2. Covert IR runway lighting used by qualified crews equipped with NVDs meets the intent of lighted landing surface.

3.16.3. **Extreme Latitudes** . In Alaska, areas located north of 60° North latitude, Antarctica, and areas located south of 60° South latitude, aircraft may be operated to unlighted airports during the period of civil twilight.

3.17. Right-of-Way. Each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way. The yielding aircraft must not pass over, under, abeam, or ahead of the other aircraft until well clear.

3.17.1. **Distress.** Aircraft in distress have the right-of-way over all other air traffic.

3.17.2. **Converging.** When converging at approximately the same altitude (except head-on or approximately so), the aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority: balloons, gliders, aircraft towing or refueling other aircraft, airships, rotary- or fixed-wing aircraft.

3.17.3. **Approaching Head-On.** If aircraft are approaching each other head-on or approximately so, each shall alter course to the right (T-0).

3.17.4. **Overtaking Aircraft.** An overtaken aircraft has the right-of-way. The overtaking aircraft must alter course to the right (T-0).

3.17.5. **Landing.** An aircraft established on final approach has the right-of-way over other aircraft on the ground or in the air, except when two or more aircraft are approaching to land. In this case, the aircraft at the lower altitude has the right-of-way but it shall not use this advantage to cut in front of or overtake the other (T-0).

3.18. Detect and Avoid. When meteorological conditions permit, pilots under instrument flight rules (IFR) or visual flight rules (VFR), whether or not under radar control, are responsible for avoiding traffic, terrain/obstacles, and environmental hazards.

3.18.1. Standard IFR separation is provided between aircraft operating under IFR in controlled airspace. Within the National Airspace System (NAS), ATC provides traffic advisories on VFR aircraft on a time-permitting basis. Outside the NAS, consult ICAO and country-specific guidance outlined in the FCG and FLIP.

3.18.2. UAS without approved sense and avoid capabilities will be operated under specific arrangements with appropriate aviation authorities (e.g., FAA, host nation, or military control) (T-0).

3.19. Proximity of Aircraft. Do not allow the aircraft to be flown so close to another that it creates a collision hazard (T-0). Use 500 ft of separation as an approximate guide except for:

3.19.1. Authorized formation flights.

3.19.2. Emergency situations requiring assistance from another aircraft. If an emergency requires visual checks of an aircraft in distress, exercise extreme care to ensure this action does not increase the overall hazard. The capabilities of the distressed aircraft and the

intentions of the crews involved must be considered before operating near another aircraft in flight.

3.19.2. (AETC) If, during an emergency the only aircraft available to chase an emergency aircraft is dissimilar, comply with the following procedures:

3.19.2.1. (Added-AETC) Assign chase duties to the most experienced formation-qualified instructor pilot (IP) available. **Note:** If no instructor is available, any formation-qualified pilot may fly chase.

3.19.2.2. (Added-AETC) Maintain a vertical separation of 1,000 feet from the emergency aircraft until visual contact is established.

3.19.2.3. (Added-AETC) Avoid areas of jetwash and wingtip vortices.

3.19.2.4. (Added-AETC) Maintain continuous radio contact between aircraft.

3.19.2.5. (Added-AETC) Fly no slower than final turn airspeed (while maneuvering to land) or final approach airspeed (while on final approach) for the aircraft with the higher speed requirement.

3.19.2.6. (Added-AETC) Conduct chase only during day VMC.

3.19.2.7. (Added-AETC) When possible, coordinate with the SOF.

3.19.3. MAJCOM-approved maneuvers in which participants are aware of the nature of the maneuver and qualified to conduct it safely (e.g. interceptor visual identification training).

3.19.3.1. (Added-AETC) Aircrews may fly a dissimilar formation if required to maintain currency, fulfill upgrade training requirements, or comply with syllabus requirements. All participants will be fully briefed prior to engaging in a dissimilar formation.

3.19.3.2. (Added-AETC) Sailplanes may share the same thermal within 500 feet of other thermalling sailplanes provided they comply with the following:

3.19.3.2.1. (Added-AETC) Aircrews will follow standard competition thermal entry and direction of turn protocol (prebriefed at competitions) or enter the thermal and maintain the same direction of turn as the first aircraft in the thermal.

3.19.3.2.2. (Added-AETC) Aircrews will maintain visual contact with other sailplanes at higher altitudes in same thermal.

3.20. Dropping Parachutists, Stores, or Other Objects. Do not allow objects to be dropped except in an emergency or for mission accomplishment (T-2). Report any accidental loss of equipment, aircraft parts, or cargo IAW AFI 10-206 and AFMAN 91-223.

3.20. (AETC) Dropping Parachutists, Stores, or Other Objects. AETC aircrews will follow guidance for airdrops as defined in the applicable AFI 11-2 MDS-specific volumes.

3.21. Fuel Jettison. Do not jettison fuel except in an emergency or when required for mission accomplishment (T-2). When jettisoning fuel and circumstances permit, provide the appropriate ATC or flight service facility with intentions, altitude, location, and completion time. Report any jettisoning of fuel IAW AFI 10-206.

3.22. Radio, Laser, and Other Electromagnetic Emitter Restrictions. Equipment which transmits radio, laser, or other energy will only be operated for the intended purpose and in the authorized manner to prevent unintentional interference, damage, or injury (T-0).

3.23. Communication, Navigation, and Surveillance Equipment. Operate equipment as authorized by the MAJCOM (in coordination with the MDS SPO). MAJCOMs will establish tactical operations guidance. When operating in controlled airspace under IFR, immediately report to ATC the loss or impairment of navigational, air-to-ground communications, or surveillance capability IAW the FIH (T-0).

3.23. (AETC) Communication, Navigation, and Surveillance Equipment. Aircrews will follow guidance in the applicable AFI 11-2 MDS-specific, volumes, for use of Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) and navigation safety systems for their particular aircraft.

3.23.1. Transponders. Operate the transponder IAW ATC instructions, host nation procedures, MAJCOM directives, and theater SPINS. In the NAS, transponders will be operated in controlled airspace, including Mode C if installed, on the appropriate code or as assigned by ATC (T-0). Prior to aircraft movement at civil airports, transponders will be “ON” in the altitude reporting mode (T-0). At all other airports, unless local procedures dictate otherwise, transponders should be turned to the “ON” or normal altitude reporting mode.

3.23.1.1. Mode S Flight ID . Prior to each flight, ensure the Mode S Flight ID matches the call sign entered exactly on the flight plan with no embedded spaces, dashes, extra characters, or added zeros (T-0). When the flight plan call sign is less than seven characters, place blank spaces only at the end.

3.23.1.2. Mode S Address . Prior to each flight, ensure the Mode S address is entered correctly. MAJCOMs will manage assigned dynamic addresses to ensure no two aircraft are airborne with the same address.

3.23.1.3. Mode 4/5 . If required, Mode 4/5 operations are outlined in the Flight Information Handbook (See MODE 4/5 in glossary).

3.23.2. Traffic Collision Avoidance System (TCAS). Aircraft equipped with TCAS shall operate in the TCAS mode that provides both Traffic Alerts (TAs) and Resolution Advisories (RAs), unless otherwise dictated by the aircraft manual, formation flight requirements, MAJCOM guidance, mission requirements, or host-nation agreements (T-1).

3.23.2. (AETC) Traffic Collision Avoidance System (TCAS). AETC aircrews may operate TCAS equipped aircraft in the mode that provides TA only, in the visual flight rules (VFR) traffic pattern.

3.23.2.1. Response to TCAS Alerts . Respond to all RAs regardless of ATC instructions, right-of-way rules, cloud clearance requirements, or other VFR/IFR flight rules, as directed by TCAS unless doing so would jeopardize the safe operation of the aircraft (e.g., descent into obstacles) (T-1).

3.23.2.1.1. Do not deviate from an assigned ATC clearance based solely on TA information (T-1). Attempt to attain visual contact and maintain safe separation.

3.23.2.1.2. In the event of an RA, alter the flight path only to the extent necessary to comply with the RA (T-1).

3.23.2.1.3. After deviating from an ATC clearance in response to an RA, notify ATC of the deviation as soon as practical and promptly return to the current ATC clearance when the traffic conflict is resolved or obtain a new clearance (T-0).

3.23.3. Terrain Awareness and Warning Systems (TAWS). Comply with appropriate flight manual procedures and MAJCOM guidance upon receipt of a Ground Proximity Warning System (GPWS)/TAWS/Enhanced GPWS (EGPWS)/Ground Collision Avoidance System (GCAS) warning. During Visual Meteorological Conditions (VMC) flight, terrain warnings do not need to be followed if the pilot can verify the warning is false by visual contact with terrain or obstacles.

3.23.4. Global Positioning System (GPS) Equipment.

3.23.4.1. MAJCOMs (in coordination with the MDS SPO), will determine if GPS is approved as the primary means of navigation and provide guidance for its use. If GPS is not approved as primary, ensure the approved primary means of navigation (e.g., VOR, TAC, etc.) is operational and monitored (T-0).

3.23.4.1. **(AETC)** Aircrews of aircraft equipped with a global positioning system (GPS) certified by the FAA are authorized to use GPS as the primary means of navigation and fly RNP APCH (Required Navigation Performance Approach) procedures (i.e., approaches with “RNAV (GPS)” in the title). Additionally, GPS overlay approaches (i.e., approaches with “or GPS” in the title) may be flown. Use of RNP AR APCH (Required Navigational Performance Authorization Required Approach) procedures (i.e., approaches with RNAV (RNP) in the title) must be specifically authorized in the applicable AFI 11-2MDS-specific, volume (or other appropriate lead command guidance), or in the Flight Manual. Authorized GPS approaches must be retrievable from the aircraft database. This does not prevent using the GPS for situational awareness on approaches that cannot be flown GPS-only. Descent to lateral navigation/vertical navigation (LNAV/VNAV) decision altitude (DA) is only authorized if the aircraft GPS is certified to FAA technical standard order (TSO) standards for those minima. Otherwise, the approach will be flown to LNAV MDA. Applicable AFI 11-2 MDS-specific, volumes (or other appropriate lead command guidance) or the flight manual will provide aircraft specific authorized minimums (LNAV/VNAV DA or LNAV MDA) and any restrictions applicable to the installed GPS equipment. Aircrews must ensure area navigation (RNAV) (GPS) minimums are compatible with aircraft equipment.

3.23.4.2. **GPS Standard Position Service (SPS) and Precise Position Service (PPS)** . Follow MAJCOM or SPINS guidance on use of SPS/PPS.

3.23.4.2. **(AETC) GPS Standard Position Service (SPS) and Precise Position Service (PPS).** Aircrews will follow guidance in the applicable AFI 11-2 MDS-specific, volumes, for use of SPS/PPS.

3.23.4.3. Receiver Autonomous Integrity Monitoring (RAIM) is required unless integrity is ensured by other means approved by the MAJCOM (T-0).

3.23.4.3.1. **Active RAIM** . If RAIM is not available, actively monitor an alternate means of navigation and inform ATC of any degraded capability (T-0).

3.23.4.3.2. **Predictive RAIM (P-RAIM)** . Check P-RAIM prior to departure when possible (T-0). If RAIM is predicted to be unavailable for more than five minutes along the route of flight, the flight must rely on other approved equipment, be rerouted, or delayed (T-0). Not required if Wide-Area Augmentation System (WAAS) enabled and flight is in WAAS coverage area (T-0).

3.23.5. **RNAV Equipment other than GPS.** (eLORAN, Inertial, Stellar, Doppler, Blended, Hybrid, Tightly-Coupled, EGI, DME/DME, GNSS other than GPS, etc.). MAJCOMs (in coordination with the MDS SPO), will determine if RNAV equipment other than GPS is approved as the primary means of navigation and provide guidance for its use. If not approved as primary, ensure the approved primary means of navigation (e.g., VOR, TAC, etc.) is operational and monitored (T-0).

3.23.5. **(AETC) RNAV Equipment other than GPS.** Aircrews will follow guidance in the applicable AFI 11-2 MDS-specific, volumes, for use of RNAV equipment other than GPS.

3.23.6. **Carry-On Equipment.** Use carry-on communication, navigation, and surveillance equipment as authorized by the MAJCOM (in coordination with the MDS SPO). MAJCOMs will publish guidance and provide training on acceptable use, limitations, and hazards of carry-on equipment. See also [paragraph 3.9](#).

3.23.6.1. **(Added-AETC)** Aircrews are authorized to use portable GPS units (PGUs) for enhanced situational awareness. These systems will not replace existing navigation equipment and will not be used as the sole means of navigation nor interfere with accomplishment of normal in-flight duties. When used, aircrews must have a backup chart available.

3.23.6.2. **(Added-AETC)** All PGUs must be approved by the OG/CC for use. (T-3) Units are responsible for ensuring aircrews are adequately trained to use approved PGUs. Use of lead command training materials and programs is authorized. In lieu of lead command guidance, units will develop their own PGU training programs.

3.24. Formation Flights (Including Air Refueling). Accomplish formation flights only as authorized by the MAJCOM.

3.24.1. **Formation Briefing** . Formation flight leads will brief formation flight operations to all participants in accordance with MAJCOM-approved guidance (T-0).

3.24.2. **Formation in Reduced Vertical Separation Minimum (RVSM) Airspace within the NAS.** Formation flights may operate in RVSM airspace if all participating aircraft are RVSM compliant or approved by ATC (T-0).

3.24.3. **Aircraft Lighting** . MAJCOMs may authorize formation flights to vary lighting configuration according to the aircraft type and mission requirement. The MAJCOM must provide guidance on this type of operation and ensure the guidance provides an equivalent level of visual identification as a single aircraft.

3.24.3. **(AETC) Aircraft Lighting.** Formation flights are authorized to vary their lighting configuration based on valid requirements as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus. Pilots operating with varied lighting configurations

outside restricted or warning areas must ensure the entire formation can be visually identified by non-participating aircraft.

3.24.4. **Transponder Operations** .

3.24.4.1. Only one aircraft (normally the lead) of a standard formation should squawk (T-0).

3.24.4.2. Unless otherwise directed, receivers will not squawk when less than 3 nautical miles (NM) from the tanker (T-0).

3.24.4.3. Unless otherwise directed by ATC, all aircraft within a non-standard formation flight will squawk until established within the assigned altitude block and closed to the proper enroute interval (T-0). When aircraft interval exceeds 3 NM, both the formation leader and the last aircraft will squawk (T-0).

3.24.5. **Traffic Collision Avoidance System (TCAS) Operations** .

3.24.5.1. Formation leads (and last aircraft, when formation length exceeds 3 NM) shall operate in TA mode unless otherwise required by ATC, host-nation agreement or specified in the MDS-specific guidance (T-0).

3.24.5.2. During refueling operations, the tanker aircraft will operate in TA mode (T-0).

3.24.6. **Non-standard Formations.** Non-standard formation flights may be conducted:

3.24.6.1. When approved by ATC;

3.24.6.1. **(AETC)** ATC must approve and issue a specific clearance for operations in a non-standard formation. The formation leader shall notify ATC upon initial contact on each new frequency that flight operations are being conducted in a non-standard formation. Advise ATC of the separation and spacing being employed.

3.24.6.2. Operating under VFR in VMC;

3.24.6.3. Operating within an authorized Altitude Reservation (ALTRV);

3.24.6.4. Operating under the provisions of a LOA; or,

3.24.6.5. Operating in airspace specifically designated for a special activity.

3.25. Large Scale Exercises. MAJCOMs will conduct large-scale exercises in permanent or temporary Special Use Airspace (SUA) established according to FAA Joint Order (JO) 7400.2, *Procedures for Handling Airspace Matters*, and FAA JO 7610.4, *Special Operation*. When MAJCOMs approve large-scale exercises or short-term special missions they will ensure information on approved activities is available to the non-participating flying public and coordinate these operations with:

3.25.1. Affected non-participating military flying units;

3.25.2. Affected FAA Air Route Traffic Control Center (ARTCC);

3.25.3. Affected FAA regions through the Air Force representative (AFREP); and,

3.25.4. Other agencies, as appropriate.

3.26. Aerobatics and Air Combat Tactics. Aerobatics, air combat tactics and air-to-ground tactics which involve aerobatic type maneuvering must be performed in SUA, ATC-Assigned

Airspace (ATCAA), military training routes (MTRs) or host-nation approved airspace IAW the guidelines in AFI 11-214, *Air Operations Rules and Procedures* (T-0). Aircraft deployed or based at overseas locations will operate IAW applicable host-nation agreements or ICAO SARPs (T-0). If the aircraft operating requirements (altitude requirements, maximum airspeeds, dropping of objects, etc.) dictated in the host-nation agreement are less restrictive than USAF/MAJCOM guidance, the most restrictive guidance shall be used (T-1).

3.27. Temporary Flight Restriction (TFR) Airspace. Aircraft will not operate in TFR airspace unless authorized (T-0).

3.28. Uncontrolled Field Procedures. Use the runway favored by the winds unless safety, air traffic considerations, or mission accomplishment makes another option more suitable (T-0). Announce your activities on the appropriate frequencies (T-0). UAS operations are prohibited at uncontrolled fields when other traffic is present (T-2).

3.29. Obstacle Clearance Responsibility. Pilots are never relieved of the responsibility for terrain and obstacle avoidance. The radio call "Radar Contact" only means the aircraft has been identified on radar. Responsibility is shared between pilot and controller only after navigational guidance is issued.

3.30. Participating in Aerial Events. Ensure compliance with AFI 11-209 when participating in aerial events, demonstrations, and static displays.

3.31. Simulated Instrument Flight.

3.31.1. For non-instrument qualified pilots, a safety observer who is able to clear outside at all times should accompany the flight either as a crewmember or in a chase aircraft. If a chase aircraft is used, maintain continuous visual contact and two-way communications between aircraft. A safety observer is defined as a current and qualified instrument pilot or a fighter weapons systems operator (or other MAJCOM-designated aircrew member) with access to a set of flight controls.

3.31.1. (AETC) When flying a practice approach without a safety observer, the pilot must maintain a composite crosscheck that maintains situational awareness with terrain and other traffic. The pilot is not relieved of the responsibility to see and avoid other traffic, terrain and obstacles.

3.31.2. **Vision Restricting Devices** . MAJCOMs must approve the use of vision restricting devices and provide specific approval for use during takeoffs and landings. Vision restricting devices will not be used without a safety observer (T-0).

3.31.2. (AETC) **Vision Restricting Devices.** The use of vision restricting devices is approved if required for continuation or student training as defined by the applicable AFI 11-2 MDS-specific, Volume 1, or approved training syllabus. For aircraft in which AETC serves as the lead command, AETC/A3V must approve the vision restricting device used in the aircraft. Pilots using vision restricting devices must be under the direct supervision of a current and qualified IP with full view of the instruments and immediate access to the flight controls. Vision restricting devices will not be used for takeoff and pilots will not descend below MDA, DH, or DA as applicable, while using a vision restricting device.

3.31.2.1. Maintain at least 2,000 ft. of obstruction clearance when using vision restricting devices if the safety observer is in a chase aircraft, or not qualified as a pilot, or does not have full view of the flight instruments and access to the flight controls (T-2).

3.31.3. When not on an IFR flight plan, the aircraft must be equipped with a functional two-way radio and have the airport environment in sight when established on the final segment of an approach (T-0).

3.32. Simulated Emergency Flight Procedures.

3.32.1. Terminate simulated emergency training if an actual emergency occurs.

3.32.2. MAJCOMs must provide guidance when an instructor pilot or flight examiner does not have immediate access to the aircraft controls.

3.32.2. (AETC) Normally, pilots will not practice simulated emergency flight procedures unless an IP or flight examiner is seated at **and** has immediate access to a set of aircraft flight controls. Pilots current or upgrading in single-seat aircraft may practice emergency flight procedures according to the applicable AFI 11-2 MDS-specific guidance. For dual-pilot aircraft, deviations from this requirement are approved if specifically addressed in the applicable AFI 11-2 MDS-specific guidance.

3.32.3. Passengers will not be onboard unless specifically approved by MAJCOM and with PIC concurrence (N/A for UAS).

3.32.4. Single-pilot aircraft require day VMC (including civil twilight)(N/A for UAS) (T-2).

3.32.5. Multi-pilot aircraft in day IMC require weather conditions at or above published circling minimums for the approach to be flown (N/A for UAS) (T-2).

3.32.6. Multi-pilot aircraft at night require weather conditions at or above 1,000 ft. ceiling and 2 SM visibility or circling minimums, whichever is higher (N/A for UAS) (T-2).

3.32.7. **Simulated Flameout, Forced Landing, or Emergency Landing Patterns (SFO/ELP)** . At controlled fields where SFO/ELP maneuvers are conducted, the facility air traffic manager shall issue an LOA with the appropriate military authority and adjacent facilities as required. The LOA shall conform to FAA Joint Order (FAA JO) 7610.4. (T-0).

3.32.7.1. MAJCOMs must provide guidance for SFO/ELP approaches when the T.O.s do not provide specific guidance; the approaches do not conform to the T.O. guidance; the approaches have not been coordinated with the ATC responsible for the airspace; or the airport/landing area does not have a prepared runway surface, an active tower/ Runway Supervisory Unit (RSU), enough runway, or proper crash/rescue equipment.

3.32.7.1. (AETC) Practice simulated flameout (SFO)/precautionary flameout (PFO)/emergency landing pattern (ELP) approaches are allowed when specifically addressed in AFI 11-2 MDS-specific guidance or applicable syllabus and the guidance conforms with requirements in the basic AFI.

3.32.8. (Added-AETC) Except for functional check flight (FCF)/operational check flight (OCF) missions, FCF training, maintenance required in flight operation checks (IFOC), and formal course syllabus requirements, **do not perform** in-flight engine shutdowns.

3.33. Vertical-Lift Operations. For this instruction, tilt-rotor aircraft in vertical-flight mode will follow helicopter guidance. MAJCOMs will provide guidance on determining phase-of-flight for aircraft capable of transition to/from vertical flight.

3.33. (AETC) Vertical-Lift Operations. Unless otherwise stated in AFI 11-2CV-22B, the CV-22 is considered a helicopter for all approaches and departures (both VFR and IFR), or when configured ≥ 60 nacelle. The CV-22 will be considered a fixed wing aircraft in all other modes of flight.

3.34. (Added-AETC) Barrier Operations. Fixed-wing aircraft will not take off or land over an approach end cable (roll over) that has been reported as loose or slack. Additionally, landing over a raised Web barrier (for example, BAK-15, MA-1A, etc.) is prohibited.

Chapter 4

PREFLIGHT

4.1. Flight Authorization. Flights in USAF aircraft will be authorized and documented IAW AFI 11-401 and MAJCOM guidance (T-1).

4.2. Pilot in Command. The PIC must be current and qualified in the aircraft to be flown or under the supervision of a current and qualified instructor pilot (to include supervision from a formation position) (T-0). If any portion of the flight will be conducted in IMC or under IFR, the PIC must hold a current instrument qualification (T-0). **Exception:** Student pilots enrolled in Undergraduate Flying Training courses, Introduction to Fighter Fundamentals, and Pilot Instructor Training may act as PIC for syllabus-directed solo flights IAW FAA JO 7610.4 (T-0).

4.2. (AETC) Pilot in Command. In single seat aircraft, a PIC undergoing training to qualify for an instrument rating must be under the supervision of an instructor pilot with a current instrument rating if any of the flight is conducted under IFR.

4.3. Approval Authority. The individual(s) designated on the Flight Authorization as the PIC is the approval authority for the flight (T-1).

4.3.1. Flying unit commanders must approve fixed-wing aircraft operations from other than established landing surfaces (e.g. highways, pastures) (T-2).

4.4. Flight Accountability. To ensure flight accountability, file a flight plan IAW GP or provide the intended route of flight to a C2 mission agency (T-2). If filing by electronic or telephonic means and departing from a DoD airfield, provide base operations with a copy of the flight plan for flight following. Use DD Form 1801, *DoD International Flight Plan*, if any portion of the flight requires RNAV. If unable to file on the ground, once airborne, file a flight plan with a Flight Service Station (FSS) or ATC facility as soon as practicable while staying clear of restricted airspace and flying VFR in controlled airspace.

4.4. (AETC) Flight Accountability. For local area flights that depart and terminate at the home or auxiliary field, aircrews may use AF Form 4327, *ARMS Fighter Flight Authorization*; AF Form 4327a, *Crew Flight (FA) Authorization*; or an overprinted DD Form 175, *Flight Plan, Military*. Aircrews may also use a locally produced form or procedure that meets the minimum flight plan information requirements for the type of flight being planned and has been coordinated with base operations. Aircrews may use locally developed procedures for commonly flown stereo routes for combat systems officer (CSO) or pilot training flights. These local procedures must meet the minimum flight plan requirements for the type of flight being planned and must be coordinated with base operations.

4.5. Mission Planning Requirements.

4.5. (AETC) Mission Planning Requirements. Aircrews are authorized to use AETC Form 856, *Mission Data*, planning documents authorized by the MDS-Specific Volume 3 instruction, or a locally generated product approved by AETC/A3V.

4.5.1. Plan missions to the maximum extent possible. Obtain current and relevant information at all possible opportunities, including:

4.5.1.1. Weather observations and forecasts (T-0). See also [paragraph 4.12](#);

4.5.1.2. NOTAMs, to include SUA and TFRs (T-0);

4.5.1.3. Airfield Suitability and Restrictions Report (ASRR) information if required by MAJCOM;

4.5.1.3. (**AETC**) T-1 and all C-designated aircraft crews will review the Airfield Suitability and Restrictions Report (ASRR)/Supplemental Theater Information File (STIF) when planning missions to unfamiliar airfields. To view the ASRR users must access from a .mil domain or through an individual Global Decision Support System (GDSS) account (<https://gdssams.maf.ustranscom.mil/gdss2web/>). Contact the Air Mobility Command (AMC) Airfield Suitability office (DSN 779-3112 or <mailto:airfield.helpdesk@amc.af.mil> for GDSS account user id and password. (**Note:** During periods when Internet connectivity is lost, the requirement to review the airfield database will not be cause for mission cancellation or delay.)

4.5.1.3.1. (**Added-AETC**) Airfields listed in the ASRR with a “P” code have selected Jeppesen procedures that can be used by AMC aircrews with approved training and a current TERPs review. However Jeppesen approaches are not approved for use on AETC missions. If an AETC mission requirement dictates the use of an approach other than a Department of Defense (DoD) or National Aeronautical Charting Organization (NACO) approach, submit requests through Stan/Eval channels to AETC/A3V.

4.5.1.3.2. (**Added-AETC**) Operations into airfields listed in the ASRR with a “Q” Code (for example, AMC/A3AS approval required) require OG/CC approval. Crews will reference the airfield database for details on “Q” code restrictions. If “Q” code restrictions do not apply to the operation being conducted (e.g., a night restriction, but the mission lands and departs during daylight) or if AMC/A3AS approval is not required (because restrictions are briefed) OG/CC approval is not required.

4.5.1.3.3. (**Added-AETC**) Airfields listed in the ASRR with a “Z” code (that is, STIF entries exist) may have AETC-specific information or restrictions. Crews will reference the airfield database for details on STIF information.

4.5.1.4. FLIP, to include appropriate navigational and plotting charts with current vertical obstructions (T-0);

4.5.1.4. (**AETC**) There are two AETC-approved options to ensure charts are updated with current vertical obstructions. They are use of: current Compressed Arc Digitized Raster Graphic (CADRG) charts (updated with Obstruction Change File [OCF] data) or Vector Vertical Obstruction Data (VVOD). VVOD will be used whenever CADRG is not current, its currency cannot be verified, or if using Enhanced Compressed Raster Graphics (ECRG) chart data.

4.5.1.4.1. (**Added-AETC**) CADRG. AETC units may use OCF data for low-level mission planning and execution, provided the underlying CADRG chart data is **current**. Obstructions previously displayed as ECHUM have been base-lined and imbedded as DCHUM in CADRG charts as of 6 May 2013. OCF data uses the same software format to display as an ECHUM overlay in FalconView. Use of OCF and current CADRG provides the same obstruction data to aircrew that met previous specifications with ECHUM. Users should beware that, when referencing OCF or

DCHUM data, NGA may offset certain obstructions from their actual location and group obstructions in close proximity under one symbol to enhance chart readability.

4.5.1.4.2. **(Added-AETC)** VVOD. Aircrew may use VVOD in lieu of CADRG to conduct low-level flight planning and execution. VVOD must be used when Enhanced Compressed Raster Graphics (ECRG) chart data are used as map displays. VVOD overlay data is required to identify obstruction data because ECRG charts do not contain the imbedded DCHUM imagery like the Compressed Arc Digitized Raster Graphic (CADRG) charts incorporate. VVOD contains all cataloged obstacles and there is no minimum obstacle height, nor are the obstacles tied to a specific chart scale. VVOD is distributed every 28 days by NGA and is normally loaded to a server or mission planning devices by mission planning support personnel. Units must determine local methods to ensure new charts are printed whenever VVOD data changes if VVOD is utilized to plan flights. The most accurate way to find the currency date of the VVOD is to open Map Data Manager, right-click the VVOD path and select “Explore.” Once in the VVOD folder, right-click the “vvod” sub-folder and select properties. The date the VVOD file was created is found 2/3 down the “vvod Properties” window. If desired, the date may be transcribed to the chart using the print “Labeling Options”//Security Options// and manually enter the date by selecting “User Specified.” **Note:** If this option is used, the LIMITED DISTRIBUTION statement is still required to be posted. You must edit the label as follows: LIMITED DISTRIBUTION (VVOD DD MMM YY). **CAUTION:** FalconView does not provide an actual VVOD currency date. It only provides a currency status. When the Vertical Obstruction Data overlay is selected, printed charts will state either “VVOD Current” or “VVOD is not current”, but will not provide an actual version number or date to verify that the data is in the current cycle. **CAUTION:** Printed charts may continue to display that VVOD is current even when the map-data path has been disabled or the server supplying VVOD is off-line. Ensure actual VVOD icons are displayed whenever charts are printed with labels that indicate that the VVOD is current. If not, re-establish the map-data path to the VVOD folder.

4.5.1.4.2.1. **(Added-AETC)** When utilizing VVOD the following settings will be selected to ensure completeness of coverage:

4.5.1.4.2.1.1. **(Added-AETC)** Hide above: 1:500 K.

4.5.1.4.2.1.2. **(Added-AETC)** Hide Text: Never.

4.5.1.4.2.1.3. **(Added-AETC)** Basic Settings: Red/Blue (Select a color that does not match the OCF [FalconView’s ECHUM] icon color.)

4.5.1.4.2.1.4. **(Added-AETC)** Hide towers less than: 200 AGL – this is the maximum allowable setting, user can define any level they desire below 200 AGL as mission requirements dictate.

4.5.1.4.2.1.5. **(Added-AETC)** Short Tower height definition: 1000.

4.5.1.4.2.1.6. **(Added-AETC)** De-Clutter level: A/R. **Note:** Applying any de-clutter level may hide factor obstacles that are required to be identified during all phases of flight. Crews will plan with de-clutter off, then compare

the desired de-clutter level with de-clutter off to ensure factor obstacles are identifiable, and chart readability/usability is maintained. A de-clutter level that combines obstacles more than 1/2 mile apart will not be used.

4.5.1.4.2.2. **(Added-AETC)** Symbology options:

4.5.1.4.2.2.1. **(Added-AETC)** Use Alternate Symbology: Un-Checked (off).

4.5.1.4.2.2.2. **(Added-AETC)** Size: (Smallest to Largest): User Defined.

4.5.1.4.2.2.3. **(Added-AETC)** Feature Group: All checked – Utility lines optional.

4.5.1.5. Fuel requirements (T-0);

4.5.1.6. Bird advisories and hazard information (T-2);

4.5.1.6. **(AETC)** Unit staffs will ensure Avian Hazard Advisory System (AHAS) and bird avoidance model (BAM) are available and accessible to unit operational supervisors, supervisors of flying (SOF), scheduling offices, and aircrews. Aircrews will review the AHAS/BAM during mission planning for all low-levels. For cross-country, out and backs and training flights using out bases, aircrews will review the AHAS/BAM for the out locations prior to departure from home field, and then at out bases to the maximum extent possible. The risk levels presented are standardized and may not necessarily impact the specific aircraft or mission. Units should consult the Risk and Bird/Wildlife Aircraft Strike Hazard (BASH) link at the AHAS/BAM website (<http://www.usahas.com/>) for more information on AHAS/BAM risk-level assignment. Units will develop procedures for risk assessment for bird hazards.

4.5.1.7. Special Departure Procedures (SDP) if authorized by MAJCOM;

4.5.1.8. As applicable: P-RAIM, Space Based Augmentation System (SBAS) coverage and NOTAMs, and air traffic management Service Availability (e.g. Automatic Dependent Surveillance-Broadcast (ADS-B) services) (T-0);

4.5.1.9. Aircraft T.O. (T-0);

4.5.1.10. MDS-specific, Volume 3 (T-1); and,

4.5.1.11. Applicable MAJCOM/COCOM guidance (e.g. flight crew information files (FCIFs) and flight crew bulletins (FCBs)).

4.5.1.12. **(Added-AETC)** PICs will carry an appropriate flight log on every mission. All lead MAJCOM-validated and -approved mission planning forms or logs are authorized for use. Locally produced products or logs require AETC/A3V approval.

4.5.1.13. **(Added-AETC)** All lead MAJCOM-validated and -approved mission planning software and systems are authorized. Aircraft for which AETC is the lead command are authorized to use mission planning software and systems as follows:

4.5.1.13.1. **(Added-AETC)** Aircrews may use Portable Flight Planning System (PFPS) or Joint Mission Planning System (JMPS) software tools for generic mission planning calculations (for example; course, distance, time, etc.) and for printing low-level and VFR charts. Aircrews must attain the most current Digital Aeronautical Flight Information File (DAFIF) or Obstacle Change File (OCF) data available prior

to using electronic mission planning products in flight. AETC/A3V validation and approval of a flight performance module (FPM) is required prior to using mission planning software for aircraft-specific performance data (for example TOLD, fuel planning, etc.).

4.5.1.13.2. **(Added-AETC)** The OG/CC will ensure aircrews are properly trained to use authorized flight planning software.

4.5.1.13.3. **(Added-AETC)** Use of authorized mission planning software does not relieve aircrews of the responsibility to remain knowledgeable of manual mission planning procedures.

4.5.1.14. **(Added-AETC)** Risk Management (RM) Checklist. (See **Attachment 5** [Added]) Aircraft commanders will:

4.5.1.14.1. **(Added-AETC)** Complete the unit's RM checklist for every mission.

4.5.1.14.2. **(Added-AETC)** Analyze and apply risk control measures—strategies and controls that reduce or eliminate risk—to reduce the probability, severity or exposure of risk.

4.5.1.14.3. **(Added-AETC)** Elevate the mission decision authority when directed by the unit RM checklist.

4.5.1.14.4. **(Added-AETC)** When appropriate, include the RM checklist in mission debriefings.

4.5.1.14.5. **(Added-AETC)** Document mission approval on the RM checklist. The decision authority's initials or an entry on an electronic checklist are adequate. **Note:** 306 FTG Sailplane pilots will complete an individual RM checklist prior to stepping to fly. Crews will include their combined RM number while logging for a sortie for Operations Supervisor approval.

4.5.1.14.6. **(Added-AETC)** For solo undergraduate and pipeline IFF students, completion of the RM checklist is the responsibility of the instructor who completes the pre-solo mission brief.

4.5.1.14.7. **(Added-AETC)** The RM checklist will reflect the aircraft commander's/controller's assessment of the entire crew.

4.5.1.14.8. **(Added-AETC)** The RM checklist will be made available for off-station use (for example, in an in-flight guide).

4.5.1.14.9. **(Added-AETC)** Units will maintain the RM checklist for each sortie until mission is complete. **Exception:** For sorties experiencing an unusual occurrence (i.e. inflight emergency or mishap), retain the RM checklist for use by safety investigators.

4.5.1.15. **(Added-AETC)** AETC aircrews should check the AETC volume training LOA list located on the AETC/A3OF SharePoint site at <https://cs3.eis.af.mil/sites/AE-OP-00-90/default.aspx> during preflight planning for all cross-country and out-and-back sorties to civilian airports. Whether or not an airport is listed, aircrews will ensure appropriate support is available prior to their arrival. Minimum support required may be supplemented by individual units and will include the following:

- 4.5.1.15.1. **(Added-AETC)** Appropriate servicing available.
- 4.5.1.15.2. **(Added-AETC)** Ground attendant to help with start/fireguard.
- 4.5.1.15.3. **(Added-AETC)** Fire extinguisher.
- 4.5.1.15.4. **(Added-AETC)** Crash, rescue, and fire response available.
- 4.5.2. **International Flights.** Comply with international procedures in FLIP GP, Area Planning (AP), ICAO guidance, host-nation procedures, and the FCG (T-0).
 - 4.5.2.1. On all departures to or from a foreign location, use extra vigilance when checking passenger manifest, cargo, and likely areas aboard the aircraft where drugs, contraband, stowaways, or other illegal substances may be concealed.
 - 4.5.2.2. Immediately report any suspected customs, agriculture, or immigration violations to the proper authorities.
- 4.5.3. **(Added-AETC)** Aircrews will use the lowest RCR value in the given range listed in the Runway Condition Assessment Matrix (RCAM) when computing TOLD.
- 4.6. Off-Station Training.** Flying unit commanders will ensure off-station training is planned to achieve valid training requirements, presents a positive view of the USAF, and does not create an appearance of government waste or abuse (T-2).
- 4.7. Military and Joint-Use Airports.** Aircrew may file to and land at US military and Joint-Use (i.e. MIL/CIV) fields.
 - 4.7.1. **(Added-AETC)** A joint use airport is defined as a military airport that authorizes civilian use (e.g., Charleston AFB). A joint use airport is not by definition a P-coded civil airport. A civil airport with a military or US Coast Guard tenant is a P-coded civil airport, not a joint use airport.
 - 4.7.1.1. **(Added-AETC)** A current government fuel contract is required for refueling on the civilian side of a joint use airfield. (T-3) WG/CC may waive this requirement on a case-by-case basis. OG/CCs may approve remain overnight (RON) at the civilian side of a joint use airfield. The following factors should be considered:
 - 4.7.1.1.1. **(Added-AETC)** Is a current government fuel contract in effect?
 - 4.7.1.1.2. **(Added-AETC)** Will any fees be charged?
 - 4.7.1.1.3. **(Added-AETC)** Is there a point of controlled entry or a similar means to prevent unauthorized entry to the airfield or aircraft?
 - 4.7.1.1.4. **(Added-AETC)** Is there airfield surveillance (periodic patrols, video monitoring, etc.) 24 hours a day, 7 days a week?
 - 4.7.1.1.5. **(Added-AETC)** Is there a process to ensure law enforcement or other security response in the event of an airfield or aircraft intrusion?
 - 4.7.1.1.6. **(Added-AETC)** Is rescue and fire response available?
- 4.8. Civil Airports.**

4.8.1. MAJCOMs may authorize filing to or landing at civil airfields. Use of civil facilities not governed by agreement or law may result in landing fees or use fees charged to the pilot or the military unit.

4.8.1. (AETC) WG/CCs may authorize operations at civil airports not P-coded in an Enroute Supplement after considering items in [paragraphs 4.7.1.1.1 through 4.7.1.1.6](#), if the airport manager grants permission in advance.

4.8.2. **“P-coded” Civil Airports** (as listed in the IFR Supplement). Aircrew may file to or land USAF aircraft at US civil public airports when:

4.8.2.1. In an emergency;

4.8.2.2. Flying a helicopter or C-coded aircraft (e.g. C-130, C-12, C-40);

4.8.2.3. Necessary in the recovery of active air defense interceptor aircraft;

4.8.2.4. An alternate is required and no other suitable airport is available;

4.8.2.5. The wing commander or higher authority approves the flight and the airport manager grants permission in advance; or,

4.8.2.5. (AETC) Before authorizing use of P-coded civil airport not on the AETC volume training LOA list, WG/CCs should consider the factors presented in [paragraphs 4.7.1.1.1 through 4.7.1.1.6](#).

4.8.2.6. A US Government tenant unit (e.g. ANG, USCG) is listed for the airport of intended landing and airport facilities or ground support equipment can support the aircraft concerned.

4.8.3. (Added-AETC) In addition to guidance listed in AFI 11-202, Volume 3, paragraph 4.8.2, aircrews are authorized to file to or land at P-coded civil airport on the AETC volume training LOA list. Airports listed with a Fixed Base Operator (FBO) on the AETC volume training LOA list are approved for remain overnight (RON). (Note: WG/CCs may authorize RON at airports without an FBO listed after considering items in [paragraphs 4.7.1.1.1 through 4.7.1.1.6](#)) Aircrews may also fly instrument approaches to a low approach under IFR at P-coded civil airport not on the AETC volume training LOA list on a non-interference basis. The AETC volume training LOA list can be found on the AETC/A3OF SharePoint site at <https://cs3.eis.af.mil/sites/AE-OP-00-90/default.aspx>.

4.9. Volume Training. Flying units shall coordinate with respective ATC agencies and civil airport authorities before conducting volume training at civil airports or within airways (T-2).

4.9.1. (Added-AETC) Under Title 49 USC, Sections 47101-47129, the Air Force may be charged a reasonable share, proportional to use, of the cost of operating and maintaining a P-coded civil airport if the use is determined to be substantial. Substantial use includes all DoD aircraft and is defined as:

4.9.1.1. (Added-AETC) Total landings that exceed 300 or more in a month; or

4.9.1.2. (Added-AETC) Gross accumulative weight of the aircraft using the airport (total landings multiplied by the aircraft gross weight) in excess of five (5) million pounds in a month.

4.9.2. **(Added-AETC)** Only after considering [paragraph 4.7.1.1](#) above, WG/CCs may approve volume training LOAs with civilian airfields and FBOs for exclusive use by unit aircrews. LOA templates can be found on the AETC/A3OF SharePoint site at <https://cs3.eis.af.mil/sites/AE-OP-00-90/default.aspx>. The templates are merely a starting point and can be modified as needed during the negotiating process. Before executing an LOA, units must conduct a site survey to minimize risk to aircraft and crews and to ensure appropriate services are available. LOAs will only be executed with FBOs that have a current government fuel contract.

4.9.3. **(Added-AETC)** AETC/A3O must approve all volume training LOAs intended for use by more than one AETC flying training wing.

4.9.3.1. **(Added-AETC)** Units wanting to add airfields to the AETC volume training LOA list will contact their local airspace office with the request. The local airspace office will consider [paragraph 4.7.1.1](#) above and coordinate a site survey to ensure airport/FBO suitability and forward completed LOAs through the OG/CC to AETC/A3O for approval. All requests must include an estimate of anticipated monthly use of the airport. A government fuel contract is required before an AETC LOA can be executed with an FBO.

4.9.3.2. **(Added-AETC)** LOA templates can be found on the AETC/A3OF SharePoint site at <https://cs3.eis.af.mil/sites/AE-OP-00-90/default.aspx>. The templates are merely a starting point and can be modified as needed during the negotiating process however AETC/A3O will not normally approve any LOAs that require fees be paid by aircrews. Following approval, airfields will be added to the list.

4.9.3.3. **(Added-AETC)** The OG/CC or equivalent of the unit listed as the LOA OPR on the AETC volume training LOA list will ensure the LOA is reviewed at least annually and reaccomplished every 5 years or sooner if changes are found during the review (ie, FBO name changes, FBO loses DoD Fuels Card contract, etc.). AETC/A3OF will be notified of completed reviews and any changes affecting the LOA.

4.10. UAS Airfields and Operations.

4.10.1. Except for divert or emergency situations, MAJCOMs shall approve all airfields authorized for use by UAS. Operations may require an approved Certificate of Authorization (COA) and appropriate LOA between the employing unit, ATC, and airfield management.

4.10.1. **(AETC)** Units will submit requests to use an airfield through AETC/A3FR to AETC/A3F for approval.

4.10.2. For operations outside special use airspace (or when required within), the mission tasking authority shall coordinate through HQ USAF/A35 to obtain a COA or waiver from the FAA (T-0). Before submitting, verify the COA complies with current FAA requirements at <http://www.faa.gov/about/initiatives/uas/>.

4.11. Aviation Into-Plane Reimbursement Card (AIR CARD ®) Responsibilities. Use the AIR CARD® only for fuel and required ground services (T-0). Refuel at military installations as a first choice followed by contract fixed base operators (FBOs) (T-0). Refuel at non-contract FBOs only if mission needs warrant servicing at such locations (T-0). Further information,

including documentation procedures and updated lists of contract FBOs is available at <https://www.airseacard.com>.

4.11. (AETC) Aviation Into-Plane Reimbursement Card (AIR CARD®) Responsibilities. Any pilot or other aircrew member who authorizes an off-station refuel or the servicing of an aircraft are considered to be AIR CARD® users and must fulfill all associated responsibilities (e.g. user training) listed in AFI 11-253, *Managing Off-Station Purchases of Aviation Fuel and Ground Services*, prior to utilizing the AIR CARD.

4.12. Weather Information.

4.12.1. **Authorized Sources.** Use the following prioritized list of sources (T-1):

4.12.1.1. Home or local installation OSS Weather Flight or MAJCOM-designated centralized briefing facility (or equivalent);

4.12.1.2. Regional Operational Weather Squadron (OWS);

4.12.1.3. Other DoD military weather sources (e.g., US Navy/Marine Corps weather facilities);

4.12.1.4. Other published MAJCOM-approved weather sources. MAJCOMs will provide guidance on use of non-DoD weather sources (e.g., commercial websites, flight planning services);

4.12.1.4. **(AETC)** Aircrews will not use commercial weather sources for flight planning purposes.

4.12.1.5. Other US Government (USG) weather facilities/services (e.g., National Weather Service, FAA);

4.12.1.5. **(AETC)** Includes Flight Service Stations (FSS)/services, managed and provided by FAA.

4.12.1.6. Foreign civil or military weather service (use only when DoD military resources or USG services are unavailable in OCONUS locations).

4.12.1.7. **(Added-AETC)** If aircrews have any questions about weather information provided and/or obtained on-line from an approved sources listed above, they will contact the providing source/unit or, if unavailable, contact another approved source above for assistance.

4.12.2. **Runway Visual Range (RVR)** . RVR reports apply to all takeoffs, landings, and straight-in approaches to the runway and take precedence over any other visibility report for that runway. Use the static RVR when available. If only a variable RVR report is received and a static RVR cannot be determined, apply the lowest reported RVR value. If necessary, convert the reported visibility from one format to another (e.g. RVR to Prevailing Visibility (PV)) only for takeoffs and straight-in approaches using the conversion tables printed in the front of the Terminal Procedures Publication (TPP) booklet. For conversions, use the higher value; do not interpolate.

4.12.2.1. If RVR is unavailable, use PV.

4.13. Aeronautical Information and Publications. Operational commanders are responsible for providing their crews with access to appropriate aeronautical information and publications for flight (T-1).

4.13.1. Authorized Information and Publications. Obtain and use information or publications from US Government (USG) sources as first preference (T-2). Do not use aeronautical information in flight which is out of date, incomplete, illegible, contains unfamiliar procedures, or is published in a language other than English (T-0).

4.13.1. (AETC) Authorized Information and Publications. Units may use out of date paper flight information publications (FLIP) for ground training (including simulator missions). When used, out of date publications must be clearly marked “For Ground Training Use Only.”

4.13.1.1. Non-USG Terminal Procedures. Non-USG terminal procedures are authorized after a Terminal Instrument Procedures (TERPS) review IAW AFI 11-230, *Instrument Procedures*; this does not apply to Standard Terminal Arrival Procedures (STARs). MAJCOM/A3 in the grade of O-8 or above (or the first O-8 in the MAJCOM/A3 chain of command) may waive the TERPS review. This waiver authority will not be further delegated (T-0). MAJCOMs shall develop aircrew training for use of non-USG products.

4.13.1.1. (AETC) Non-USG Terminal Procedures. Aircrews must accomplish all AFI 11-2MDS-specific training prior to use of non-USG terminal procedures. Additionally, aircrews and planners should check the GDSS <https://gdssams.maf.ustranscom.mil/gdss2web/> to see if the necessary procedure review for Non-US Government and Foreign Terminal Instrument Procedures has been accomplished and approved for USAF use. If a review is not posted or is not current, AETC aircrews should contact the MAJCOM TERPS office responsible for the AOR where the airfield is located. If more information is required, AETC aircrews can also contact AETC TERPS office at <mailto:aetc.terps@randolph.af.mil> for further guidance.

4.13.2. Electronic Equivalent and Non-Standard Formats. Paper publications and documents are not required if replicated by electronic means and authorized by the MAJCOM. Formats which are rendered from a database or which do not maintain the original size, scale, format, or color may be authorized by the MAJCOM.

4.13.2. (AETC) Electronic Equivalent and Non-Standard Formats. See [Attachment 6](#).

4.13.3. Required Publications. Follow MAJCOM or MDS-specific guidance for required publications to be available in the aircraft or accessible to UAS operators (e.g., navigation charts, FIH, TPP) (T-1).

4.13.4. NOTAMS. Obtain NOTAMS from the Defense Internet NOTAM Service (DINS) or the Defense Aeronautical Information Portal (DAIP) when it replaces DINS. If unavailable, obtain NOTAMS by contacting one of the installations listed in FLIP or the nearest Aeronautical Information Service (T-0).

4.13.4.1. If using non-USG products or databases, obtain the associated NOTAMs, alerts, and advisories from the respective country or agency (T-1).

4.13.5. Navigation, Terrain, and Obstacle Databases. Obtain databases through MAJCOM-authorized processes. Review aeronautical navigation database NOTAMS prior to flight (T-1).

4.13.5. (AETC) Navigation, Terrain, and Obstacle Databases. Prior to flight, crews must check navigation database validity. If the database has expired, the crew:

4.13.5.1. **(Added-AETC)** Shall get the database updated at the first opportunity.

4.13.5.2. **(Added-AETC)** May not use the database to fly procedures that require terminal or better accuracy (i.e. terminal or approach).

4.13.6. Global Navigation Satellite System (GNSS) Predictive RAIM. Predictive RAIM is mandatory. MAJCOMS will publish MDS-specific information for use of RAIM prediction procedures.

4.13.6. (AETC) Global Navigation Satellite System (GNSS) Predictive RAIM. Aircrews will use AFI 11-2MDS-specific, Volume 3 guidance.

4.13.6.1. **Precise Positioning Service (PPS) RAIM** . MAJCOMS may authorize use of civil (i.e. Standard Positioning Service (SPS)) RAIM prediction services if a PPS RAIM prediction tool is not available.

4.14. Area Navigation (RNAV) and Required Navigation Performance (RNP).

4.14.1. Before flight, confirm the availability of the performance-based operations infrastructure for the intended route and procedures (T-0).

4.14.2. If a specified RNP level cannot be achieved, revise the route or delay departure until the appropriate RNP level can be assured (T-0).

4.14.3. The onboard navigation database should be current for the region of intended operation. MAJCOMS will publish guidance for continued enroute operations with a non-current navigation database. For terminal procedure guidance, see [paragraph 7.3.2](#).

4.14.3. **(AETC)** Aircrews may continue a mission with an expired database if the database information required for the flight can be verified with current FLIP.

4.14.4. Ensure planned waypoints and procedures (departure, arrival, approach) are included in the current onboard navigation database prior to flight (T-0).

4.15. IFR Flight.

4.15.1. Fly USAF fixed-wing aircraft under IFR to the maximum extent practical. Pilots shall fly under IFR if:

4.15.1.1. Weather conditions do not permit VFR flight (T-0);

4.15.1.2. Airspace rules require IFR flight (T-0);

4.15.1.3. Operating in excess of 180 knots true airspeed (KTAS) within (not simply crossing) federal airways (T-1); or,

4.15.1.4. Operating fixed-wing aircraft at night, unless the mission cannot be flown under IFR.

4.15.2. **IFR Destination Filing Requirements.** Flowcharts are available in [Attachment 2](#) (Fixed-Wing) or [Attachment 3](#) (Helicopter).

4.15.2.1. **Required Weather .**

4.15.2.1.1. **Fixed-Wing and Helicopter.** Prevailing weather for the estimated time of arrival (ETA) 1 hour at destination must be at or above the lowest compatible published landing minimums (TEMPO conditions may be below published minimums at ETA 1 hour) (T-1). Helicopters may reduce visibility by one-half, but no lower than 1/4 SM PV or 1,200 ft RVR (T-1). See [paragraph 4.15.3](#) for alternate requirements (T-1). **Exception:** MAJCOMs may authorize filing to a destination with weather below the lowest compatible landing minimums, but must establish supplemental recovery procedures such as the use of two or more alternate airports, additional holding fuel, etc.

4.15.2.1.1. **(AETC) Fixed-Wing and Helicopter.** Unless specifically addressed in AFI 11-2MDS-specific guidance, aircrews will not file to a destination when the prevailing weather is lower than the published landing minimums. When AFI 11-2 MDS-specific guidance authorizes such operations, the guidance is only considered valid for AETC aircrews if it prescribes substitute alternate procedures.

4.15.2.1.1.1. For a straight-in or sidestep approach, the forecast weather must meet required visibility minimums (T-1).

4.15.2.1.1.2. For a circling approach, the forecast weather must meet both the ceiling and prevailing visibility minimums (T-1).

4.15.2.1.1.3. For an RNAV/RNP/GNSS approach based on SBAS and annotated with the “W” symbol, weather must meet Lateral Navigation (LNAV) minimums (T-1).

4.15.2.1.2. **UAS.** In the absence of MAJCOM UAS weather guidance, follow manned fixed-wing and helicopter weather requirements (T-1).

4.15.2.2. **Available Instrument Approach.**

4.15.2.2.1. Pilots must file IFR to a destination or an alternate with a compatible instrument approach (T-1). If there is no compatible published approach at the destination, pilots may proceed to a point served by a published approach or to an IFR point where forecast weather at ETA 1 hour allows the pilot to continue VFR to the destination.

4.15.3. **Requiring an IFR Alternate.**

4.15.3.1. **Weather.** An alternate is required when the worst weather at destination, to include TEMPO conditions, at the ETA 1 hour is less than:

4.15.3.1.1. **Fixed-Wing Aircraft.** A ceiling of 2,000 ft or a visibility of 3 SM (T-0).

4.15.3.1.2. **Helicopters.** A ceiling of 1,000 ft. (or 400 ft above the lowest compatible approach minimums, whichever is higher) or a visibility of 2 SM (T-0).

4.15.3.1.3. **UAS.** MAJCOMs will determine alternate airfield policies for UAS.

4.15.3.2. **Other Conditions Requiring an Alternate:**

- 4.15.3.2.1. All compatible approaches require radar (T-1);
 - 4.15.3.2.2. Required navigational aids (NAVAID) will be unmonitored (T-1);
 - 4.15.3.2.3. The destination has no weather reporting capability (T-1);
 - 4.15.3.2.4. The airfield's lowest compatible approach weather minimums are greater than or equal to a 1,500 ft. ceiling or 3 SM visibility (T-1); or,
 - 4.15.3.2.5. GPS is the only available NAVAID (T-1).
 - 4.15.3.2.6. **(Added-AETC)** Regardless of weather, where forecast winds exceed aircraft limits ± 1 hour of ETA.
 - 4.15.3.2.7. **(Added-AETC)** Regardless of weather, when denial of accommodation to reduced vertical separation minimum (RVSM) airspace would prevent the aircraft or flight from reaching its planned destination, a suitable alternate will be designated that does not require accommodation.
- 4.15.3.3. **Exceptions:**
- 4.15.3.3.1. **Remote or Island Destinations** . MAJCOMs may authorize holding for a specified time in lieu of filing an alternate for remote or island destinations. MAJCOMs will define remote or island destinations and prescribe weather criteria and recovery procedures.
 - 4.15.3.3.1. **(AETC) Remote or Island Destinations.** A remote or island destination is defined as any aerodrome, which due to its unique geographic location, offers no suitable alternate (civil or military) within 2 hours flying time. Unless specifically addressed in AFI 11-2 MDS-specific guidance, aircrews will not hold in lieu of an alternate for remote or island destinations for which designating an alternate is not possible.
 - 4.15.3.3.2. Alternate requirement may be cancelled enroute if weather conditions improve at destination to exceed [paragraph 4.15.3.1](#).
- 4.15.3.4. **Selecting an Alternate.** The worst alternate forecast weather conditions for ETA 1 hour, to include TEMPO conditions (except those caused by thunderstorms, rain showers, or snow showers) will meet or exceed:
- 4.15.3.4.1. **Fixed-Wing Aircraft.** A ceiling of 1000 ft., or 500 ft. above the lowest compatible minimum, whichever is higher; and a visibility of 2 SM or 1 SM above the lowest compatible minimum, whichever is higher (T-0).
 - 4.15.3.4.2. **Helicopters.** A ceiling of at least 200 ft. above, and a visibility of at least 1 SM above the lowest compatible published landing minimum (T-0).
 - 4.15.3.4.3. **UAS.** MAJCOMs will establish UAS alternate airfield policies.
 - 4.15.3.4.4. **Alternate without a Published or Compatible Instrument Approach Procedure.** Forecast weather for the ETA (± 1 hour) must permit a VFR descent from a published IFR altitude to a VFR approach and landing (T-0). Conditions in para 4.15.3.5. do not apply when utilizing this option.

4.15.3.5. **Conditions Disqualifying an Alternate.** The disqualifying conditions below may be listed throughout various sources (e.g., TPP, NOTAMs, IFR Supplement):

4.15.3.5.1. All compatible approaches require radar (T-1).

4.15.3.5.2. All compatible approaches require an unmonitored NAVAID (T-1).

4.15.3.5.3. The airfield does not have a weather reporting service (T-1).

4.15.3.5.4. “**▲**NA” (Alternate Not Authorized) on all compatible approaches (T-1).

4.15.3.5.5. Any note disqualifying the airfield or all compatible approaches in the IFR Alternate Minimums section **▲** (T-1).

4.15.3.5.6. GPS is the only available NAVAID (T-1).

4.15.3.5.7. **(Added-AETC)** Regardless of weather, forecast winds exceed aircraft limits ± 1 hour of ETA.

4.15.3.5.8. **(Added-AETC)** Regardless of weather, access to RVSM airspace is required to reach the alternate for non-compliant aircraft.

4.16. VFR Flight.

4.16.1. Weather. Do not operate under VFR when the flight visibility is less than, or at a distance from clouds that is less than the criteria listed in **Table 6.1** or **6.2**. (T-0).

4.16.1. **(AETC)** Weather. Do not operate fixed-wing aircraft VFR when the ceiling is less than 1,500 feet. **Exception:** On a case by case basis, OG/CCs may authorize use of AFI 11-202, Volume 3 Table 6.1 minimums.

4.16.2. Fly fixed-wing aircraft under VFR only when required for mission accomplishment. Mission examples include: operational necessity, host-nation requirements, training, proficiency or evaluation sorties, aircraft equipment that precludes IFR flight, and ATC or NAVAID limitations that preclude IFR flight. All aircraft comply with the AFMAN 11-217 series and the following:

4.16.2.1. Ensure VFR operations are authorized and properly planned (T-2).

4.16.2.1. **(AETC)** Do not file VFR to a location where forecast winds at the ETA ± 1 hour exceed aircraft limits.

4.16.2.2. Utilize radar advisory and monitoring or control services when practical to ensure flight following by any available means (e.g. FSS or C2 agency) (T-2).

4.16.2.3. When conditions (weather, airspace, etc.) prevent completing the mission under VFR, alter route and continue under VFR until reaching the destination, obtain an IFR clearance, or land at a suitable location (T-0).

4.16.2.4. When conducting tactical operations, fly under VFR unless compliance with VFR degrades mission accomplishment (T-2).

4.16.2.5. **Special VFR (SVFR)** . Fixed-wing aircraft shall not fly under SVFR (T-1). MAJCOMs may allow helicopter aircrews to fly under SVFR IAW 14 CFR §91.157 (within the NAS) or appropriate host-nation guidance.

4.16.2.5. **(AETC) Special VFR (SVFR).** Helicopter aircrews may operate under SVFR with the following provisions:

4.16.2.5.1. **(Added-AETC)** Obtain an ATC clearance.

4.16.2.5.2. **(Added-AETC)** Remain clear of clouds.

4.16.2.5.3. **(Added-AETC)** Maneuver at a speed that will allow adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

4.16.2.6. **VFR Over-the-Top** . When operating VFR above a ceiling, follow guidance in AFMAN 11-217 series.

4.16.2.7. **IFR "VFR-on-Top"** . Pilots may request "VFR on Top" operations (IAW AFMAN 11-217 series) when the mission dictates.

4.16.2.7. **(AETC) IFR "VFR-on-Top."** "VFR on top" operations are prohibited unless prescribed in AFI 11-2MDS-specific or syllabus guidance.

4.17. Flight Plans.

4.17.1. Ensure a flight plan is filed IAW MAJCOM guidance for any flight (T-1). By filing a flight plan, the PIC certifies:

4.17.1. **(AETC)** The act of accepting the aircraft tail number from the duty desk by the PIC signifies compliance with this paragraph for units using Training Integration Management System (TIMS).

4.17.1.1. The flight was properly ordered, authorized, and released IAW AFI 11-401;

4.17.1.2. The flight will be conducted IAW all governing directives (see [paragraph 1.2](#));

4.17.1.3. Compliance with paragraph 4.5;

4.17.1.4. The flight plan has been reviewed for completeness and accuracy;

4.17.1.5. Responsibility for the safety of the aircraft, the formation, and its occupants;

4.17.1.6. The flight complies with Air Defense Identification Zone (ADIZ) restrictions and SUA or MTR scheduling and coordination procedures specified in FLIP and NOTAMs.

4.17.2. **Passenger Manifests and Crew Lists.** List passengers on a DD Form 2131, *Passenger Manifest*, or a MAJCOM-approved form (T-1). File the manifest and crew list with the flight plan, the passenger service facility, or other responsible agency (T-0). Notify C2 prior to departure if there is a passenger manifest (or crew list) change (T-2). When able, process any changes with the original processing facility or a responsible agency.

4.17.3. **Flight Plan Changes.** The format for making changes to a flight plan is printed on the back of the DoD IFR Supplement. Ensure ATC and/or destination is aware of changes to prevent erroneous Search and Rescue (SAR) or unannounced arrival (T-0). Before takeoff or while airborne, changes may be made to the original filed flight plan without re-filing provided:

4.17.3.1. The change does not penetrate an ADIZ;

4.17.3.2. The controlling ATC agency approves the change for an IFR flight; or,

4.17.3.3. The change complies with applicable host-nation rules.

4.17.4. **Closing the Flight Plan.** When landing at a tower-controlled airfield in the NAS, an IFR flight plan should close automatically. When landing at a military airfield, base operations will close VFR/DVFR flight plans. When landing at a civilian airfield without a tower or arriving at a civilian airfield VFR/DVFR, the pilot is responsible for ensuring that flight plans are closed, either by contacting an FSS, the originating military base operations, or through an ATC facility (T-0).

4.18. Fuel Requirements.

4.18.1. Ensure sufficient fuel is available onboard the aircraft to comply with the requirements of this instruction and safely conduct the flight (T-0). Use MAJCOM-approved fuel efficiency techniques and procedures to the maximum extent practical (T-2). Before takeoff or immediately after in-flight refueling, the aircraft must have enough usable fuel to complete the flight:

4.18.1. (AETC) Fuel optimization will be considered throughout all phases of mission planning and execution. Once the objectives of the mission are complete, sorties will be terminated at the earliest opportunity. Adherence to average sortie duration will not be the driving factor of whether to land the aircraft or continue the mission.

4.18.1.1. To a final landing, either at the destination airport or alternate airport (if required), plus fuel reserves (T-0); or,

4.18.1.2. Between Air Refueling Control Points (ARCPs) and then to land at the destination (or a recovery base, if refueling is not successful), plus the fuel reserve (T-2).

4.18.1.2.1. Helicopters may fly between ARCPs without required fuel to destination or recovery base in the event of an unsuccessful air refueling.

4.18.2. **Alternate Airport Fuel Requirements.** When an alternate airport is required, fuel required for an approach and missed approach at the intended destination must be included in the total flight plan fuel if visibility-only weather criteria is used at the destination (T-1). Fuel required for a missed approach is not required if both ceiling and visibility criteria are used (T-1).

4.18.3. **Fuel Reserve.** Ensure the aircraft is carrying enough usable fuel on each flight to increase the total planned flight time between refueling points by 10 percent (up to a maximum of 45 minutes for fixed-wing or 30 minutes for helicopters) or 20 minutes, whichever is greater (T-0). Compute fuel reserves using MAJCOM-defined consumption rates for normal cruising speeds or the following:

4.18.3.1. For reciprocating engine aircraft and helicopters, use fuel consumption rates for normal cruising altitudes (T-1).

4.18.3.2. For turbine-powered aircraft use fuel consumption rates that provide best endurance at 10,000 ft. MSL (T-1).

4.18.3.3. If the MAJCOM authorizes holding (instead of an alternate airport) for a remote or island destination, do not consider the prescribed holding time as part of the total planned flight time or fuel reserve (T-1).

4.18.4. **Equal Time Point (ETP).** In the absence of MDS-specific guidance, multi-engine aircraft without the ability to in-flight refuel, operating for extended periods over large bodies of water or desolate land areas (outside gliding distance to a suitable landing site) shall calculate and plot on a navigational chart an ETP to a suitable alternate for that mission leg. Contingency fuel requirements shall also be planned (e.g., engine-out depressurized flight from an ETP to a suitable landing site) (T-1).

4.19. Preflight Briefings.

4.19.1. Prior to flight, ensure each crewmember and passenger is briefed on items affecting safety or mission completion (T-0). At a minimum, briefings will include:

4.19.1.1. Emergency signals and procedures (T-0);

4.19.1.2. Aircrew and passenger flight equipment/systems usage information to include the location and use of emergency exits, parachutes, oxygen, communications systems, and survival equipment (T-0); and,

4.19.1.3. Safety precautions and restrictions to include Foreign Object Damage (FOD) hazards and electronic device prohibitions (T-1).

4.19.1.3.1. **(Added-AETC)** Crewmembers will not wear rings, wigs, hairpieces, ornaments, barrettes, pins, clips, earrings, or any other item deemed potential foreign object damage (FOD) or safety hazards by the pilot in command (PIC) on the flight line or while performing duties at the aircraft.

4.19.1.3.2. **(Added-AETC)** When aircrews wear helmets, they must style their hair to ensure the helmet fits properly and is not too bulky to prevent improper fitting of the helmet; they must also ensure that their hair does not interfere with the proper positioning of the helmet nape strap.

4.19.1.3.3. **(Added-AETC)** The PIC will ensure other passenger's attire will not create a FOD or safety hazard.

Chapter 5

DEPARTURE

5.1. Weather.

5.1.1. **Minimum Takeoff Weather.** Takeoffs are prohibited when existing weather is below landing minimums (T-2). MAJCOMs will publish alternative takeoff minimums and recovery procedures when takeoff weather is lower than published landing minimums. In all cases, takeoff visibility must be 600 RVR (180 meters) or greater (T-1).

5.1.1. **(AETC) Minimum Takeoff Weather.** Unless specifically addressed in AFI 11-2 MDS-specific guidance, aircrews will not take off when the weather is lower than the pilot weather category minimums or published landing minimums, whichever are higher. When AFI 11-2 MDS-specific guidance authorizes takeoffs with weather below landing minimums, the guidance is only considered valid for AETC aircrews if it prescribes alternate takeoff minima and substitute recovery procedures.

5.1.1.1. **Fixed-wing RVR Requirements.** Takeoff with weather below 1600 RVR is not authorized unless the runway has operating centerline lights, visible runway centerline markings, and two operative RVR reporting systems (T-1). All RVR readings must meet or exceed minimum authorized values for departure (T-1).

5.1.2. **Freezing Precipitation.** Do not takeoff with ice, snow, frost, or other contamination adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft, unless authorized by the flight manual (T-2).

5.1.2.1. A thin coating of frost is permitted on the fuselage, provided the lettering and/or paint lines are visible.

5.1.2.2. Light frost (up to 1/8 inch thick) caused by super-cooled fuel is permitted on the lower wing surface (i.e., below the fuel tank area) if the fuselage and all other control surfaces are free of icing. If deicing is required on any other aircraft surface, the under wing frost shall also be removed (T-2).

5.1.2.3. Information on the removal and prevention of frozen precipitation is contained in AF T.O. 42C-1-2, *Anti-Icing, De-Icing and Defrosting of Parked Aircraft*.

5.1.3. **Takeoff Near Hazardous Weather.** Do not takeoff where thunderstorms or other hazardous conditions are producing hail, strong winds, gust fronts, heavy rain, lightning, wind shear, or microbursts (T-2).

5.2. **Turns after Takeoff.** Do not turn after a takeoff until at least 400 ft. above the Departure End of the Runway (DER) elevation, at a safe airspeed, and past the end of the runway (if visible) unless specifically cleared by the controlling agency, required by a published procedure, or when executing a closed pattern (T-0).

5.2.1. When turning on departure from an aerodrome with a temperature of 0° C or less, aircrew will temperature correct all minimum specified turn altitudes (including the 400 ft. above DER) utilizing the temperature correction chart in the FIH (T-1).

5.3. VFR Climb Performance. Unless specifically authorized, fixed-wing multi-engine aircraft will not depart a location under VFR without ensuring that they can vertically clear published IFR departure procedure restrictions along the planned departure route with one engine inoperative (OEI) (T-2).

5.3. (AETC) VFR Climb Performance. AETC/A3 authorizes AETC fixed-wing multi-engine aircraft to depart VFR even if they do not meet published IFR departure climb gradients with one engine inoperative. The PIC will complete a thorough review of the planned departure track to ensure terrain and obstacle clearance capability. This option to be used only as a last resort when the mission priority justifies the increased risk.

5.4. IFR Climb Performance. Unless otherwise published and charted with “ATC” designation, all climb gradients must be assumed to be obstacle based. Only MAJCOM-authorized procedures for climb performance assessment may be used (vice locally developed procedures). MAJCOMs may authorize SDPs. Aircrew must be trained before use of any SDP (T-1).

5.4.1. Low Close-in Obstacles. Ensure the aircraft can vertically clear applicable published low close-in obstacles along the planned ground track (T-1). Low close-in obstacles may be listed in the Obstacle Departure Procedures ▼ (ODP) section, NOTAMs, or charted on the published procedure. Published or ATC climb gradients do not account for low close-in obstacles in their climb gradient calculations; therefore, low close-in obstacle clearance is not assured when complying with the published or ATC climb gradient.

5.4.2. ATC Climb Gradient. Aircraft are required to meet ATC climb gradients with all engines operating (AEO) (T-0). If the aircraft does not have the computed performance to meet the charted ATC climb gradient, coordinate with ATC prior to flight.

5.4.3. Obstacle Climb Gradient.

5.4.3.1. Ensure the aircraft can comply with the respective obstacle climb gradients below:

5.4.3.1.1. Ensure the aircraft can meet or exceed 200 ft/NM or the published climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

5.4.3.1.2. **Multi-Engine Fixed-Wing Aircraft.** With OEI, ensure the aircraft can meet 200 ft/NM or the published climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

5.4.3.1.2.1. If unable to meet published obstacle climb gradient OEI, and operationally necessary, the MAJCOM/A3 may authorize subtraction of up to 48’/NM from the required obstacle climb gradient. This subtraction does not apply to SDPs.

5.4.3.1.2.1. **(AETC)** If operationally necessary, AETC/A3 authorizes the operations supervisor (or equivalent mission execution authority supervisor) to allow the PIC to ensure the aircraft vertically clears all obstacles along the planned departure path OEI by subtracting up to 48’/NM from the published (or standard) climb gradient.

5.4.3.2. If unable to meet the required obstacle climb gradient, consider aircraft, mission, or environmental changes such as reducing aircraft gross weight or delaying for more favorable weather conditions. If still unable to comply with the required obstacle climb gradient, an IFR departure is not authorized (T-0).

5.4.3.2.1. If the mission justifies the increased risk, MAJCOM/A3 may authorize a departure in VMC regardless of climb gradient compliance. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent).

5.4.3.2.1. (AETC) If unable to meet or exceed the required IFR departure climb gradient, AETC/A3 authorizes a VMC climb to the IFR MEA or a VFR departure. A VMC climb to the IFR MEA or a VFR departure is to be used only as a last resort when the mission priority justifies the increased risk.

5.4.4. (Added-AETC) **Special Departure Procedures.** Aircrews will follow lead MAJCOM guidance, to include required training, as outlined in the applicable AFI 11-2 MDS-specific volumes. Aircrews will:

5.4.4.1. (Added-AETC) Use only the most current procedure and brief the procedure prior to takeoff,

5.4.4.2. (Added-AETC) Not exceed the maximum gross weight published for the procedure,

5.4.4.3. (Added-AETC) Fly SDP routing that differs from clearance routing only in an emergency, unless approved by ATC.

5.5. IFR Departure Methods. Obstacle Departure Procedures (ODPs) and/or Standard Instrument Departures (SIDs) should be flown to the maximum extent possible.

5.5.1. Depart IFR using one, or a combination of, the methods listed below (T-1). If the airport does not have one of these IFR departure methods, an IFR departure is not authorized (T-1).

5.5.1.1. Diverse Departure (ICAO - Omnidirectional Departure).

5.5.1.2. Obstacle Departure Procedure ▽ (ODP).

5.5.1.3. Standard Instrument Departure (SID).

5.5.1.4. Specific ATC Departure Instructions.

5.5.1.5. Non-Standard Takeoff Minimums.

5.5.1.6. MAJCOM Certified Procedure.

5.5.2. The following information applies to the departure methods listed above:

5.5.2.1. **Diverse Departure (ICAO - Omnidirectional Departure).** A diverse departure is an IFR departure procedure used at an airport that has at least one published approach but lacks non-standard takeoff minimums and/or IFR departure procedures. Track runway centerline to 400 ft. above the DER elevation before turning on course. Ensure aircraft will vertically clear applicable low close-in obstacles published in

NOTAMs or the Takeoff Minima and ODPs ▼ before turning on course. Diverse departures are not authorized when an ODP, obstacle climb gradient, or non-standard takeoff weather minimums are published for the planned departure runway (T-0).

5.5.2.1.1. **Sector Diverse Departure** . Fly “sector” diverse departures as published (T-0).

5.5.2.2. **Obstacle Departure Procedures ▼ (ODP)**. Also known as a “trouble T” (▼), ODP refers to textual or graphical instructions to ensure departure obstacle clearance. Notify ATC (or other traffic) when planning to depart via an ODP (T-0). ODPs also include:

5.5.2.2.1. **Visual Climb Over Airport (VCOA)** . Do not fly any VCOA procedure until completion of MAJCOM-specified training (T-1). The weather must be at or above the minimums published for the VCOA (T-0). Unless otherwise published, consider VCOA visibility requirements as the “remain within” distance and do not exceed this radius from the center of the airfield while climbing to the specified altitude (T-1). Notify ATC (or other traffic) when planning to depart via the VCOA (T-0). Except for MAJCOM-approved NVD trained and equipped aircrew, do not fly VCOA procedures at night (T-1).

5.5.2.2.1. (AETC) **Visual Climb Over Airport (VCOA)**. Aircrews will comply with MDS-specific required training (if any), review AFMAN 11-217, Volume 1 VCOA procedures, and review the VCOA presentation on the AETC/A3V SharePoint site <https://eis.aetc.af.mil/hq/A23/A3V/default.aspx> (click on “Other Related Training Documents” then “Visual Climb Over Airport (VCOA) Training”) prior to executing any VCOA ODP. Aircrews will not fly a VCOA at night.

5.5.2.2.2. **Reduced Takeoff Runway Length (RTRL)** . When using a published RTRL procedure, ensure the aircraft can attain a safe liftoff speed prior to the distance remaining specified in the procedure (T-0). Aircrew will only use RTRL procedures if published as an ODP in FLIP (T-1). MAJCOM-approved RTRL procedures will be considered a published ODP.

5.5.2.3. **Standard Instrument Departures (SID)**. Follow SID procedures as published (T-0). Comply with applicable notes, low close-in obstacles, and climb gradients on the SID (T-0). SIDs without a published climb gradient have been assessed at 200 ft/NM. If the SID does not have published low close-in obstacles but has an ODP ▼ annotated, refer to the corresponding runway ODP for potential low close-in obstacles. Reference all published low close-in obstacle locations to ensure compliance.

5.5.2.3.1. Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

5.5.2.4. **Specific ATC Departure Instructions**. ATC instructions refer to navigational guidance (e.g. heading, routing, and altitude) issued with a departure clearance.

5.5.2.4.1. If the departure runway has multiple published climb gradients, pilots must meet or exceed the highest gradient when departing via ATC instructions (T-0). This does not apply to a charted Diverse Vector Area (DVA).

5.5.2.4.2. **Diverse Vector Area (DVA).** A DVA may be established to allow radar vectors in lieu of an ODP. The ▼ symbol may denote the existence of a charted DVA within FLIP. Headings will be as assigned by ATC and climb gradients, when applicable, will be published.

5.5.2.4.2.1. If a DVA is charted, only use the climb gradient associated with the DVA.

5.5.2.4.3. Outside the NAS in a non-radar environment, confirm minimum climb gradient for departure sector (T-0). The obstacle-based climb gradient is not standardized at 200 ft/NM outside the NAS.

5.5.2.5. **Non-Standard Takeoff Minimums.** Departures using non-standard takeoff minimums (ceiling and visibility) must ensure the aircraft is at or above the published ceiling by the end of the runway (OEI for multi-engine fixed-wing aircraft), then continue climbing at 200'/NM or published climb gradient associated with the non-standard takeoff minimums (or IAW 5.4.3.1.2.1) to a minimum IFR altitude (T-1). Non-standard takeoff minimums shall not be used to “see-and-avoid” obstacles (T-1).

5.5.2.5.1. If the ODP has a non-standard takeoff minimum with a published climb gradient, cross the departure end of runway at the published ceiling then comply with the published climb gradient (T-1).

5.5.2.6. **MAJCOM Certified Procedure.** In Restricted Areas or during contingency operations, MAJCOM/A3s may develop and authorize departure procedures for their aircraft at specific locations if no other procedure can be developed IAW AFI 11-230. Complete MAJCOM-specific training before using such procedures (T-1).

Chapter 6

ENROUTE

6.1. Airspace Clearance Authority.

6.1.1. **Uncontrolled Airspace.** The PIC is the clearance authority for IFR or VFR flight in uncontrolled airspace (T-0).

6.1.2. Controlled Airspace.

6.1.2.1. **VFR.** The PIC is the clearance authority for VFR flight (if allowed) in controlled airspace. If cancelling an IFR clearance, request flight following to the maximum extent possible (T-2). VFR flight following is not required if already in contact with the destination's control tower.

6.1.2.2. **IFR.** Pilots shall obtain ATC clearance before an IFR departure (or as soon as practicable after departure while maintaining VMC) or before entering controlled airspace (T-0).

6.2. Minimum Aircraft Altitude.

6.2.1. **VFR.** In the NAS, fly appropriate VFR hemispheric altitudes when higher than 3,000 ft above ground level (AGL), unless authorized by ATC (T-0). Do not apply these altitudes when turning or holding in a holding pattern of 2 minutes or less (T-0). Outside the NAS, fly altitudes or flight levels as specified in FLIP (T-0).

6.2.1. **(AETC) VFR.** Cell formations of up to six aircraft are exempt from adhering to established VFR cruising altitudes (FAA Exemption #133I, 20SEP72). This exemption also applies to individual aircraft and cell formations operating at or above 12,000 feet MSL within approved refueling anchors and refueling tracks.

6.2.2. **IFR.** Except when necessary for takeoff, landing, or when being vectored by ATC, do not fly lower than:

6.2.2.1. On Airways, no lower than any published minimum for the airway (T-0).

6.2.2.2. Off Airways, no lower than:

6.2.2.2.1. The Off Route Obstacle Clearance Altitude (OROCA) (T-1);

6.2.2.2.2. The Off Route Terrain Clearance Altitude (ORTCA) (T-1); or,

6.2.2.2.3. An altitude that provides at least 1,000 ft. of clearance above all obstacles within 4 NMs of the course to be flown in non-mountainous terrain, or 2,000 ft. in mountainous terrain (T-0).

6.2.3. **Other Minimum Altitudes.** Except for MAJCOM-approved aerial demonstrations/events or during takeoff or landing, do not operate aircraft below an altitude that, should an emergency landing become necessary, creates undue hazard to persons or property (T-0).

6.2.3. **(AETC) Other Minimum Altitudes.** Participation in an aerial demonstration/event must be approved in accordance with AFI 11-209, as supplemented, before operating below the basic AFI stated altitude requirements.

6.2.3.1. Military Routes and Special Use Airspace (SUA). Adhere to minimum altitudes published in FLIP AP for all military routes and special use airspace (e.g., restricted airspace, military operations areas (MOAs), slow speed training routes (SR), IFR military training routes (IR), VFR military training routes (VR), and controlled firing areas) (T-0).

6.2.3.1.1. Any aircraft operation within a restricted area which is approved by the using agency and coordinated with the controlling ATC agency may deviate from restrictions listed in [paragraphs 6.2.3.2](#) through [6.2.3.4](#) if they are not compatible with the operation of the aircraft and create the same hazards as the operations for which the restricted area was designated.

6.2.3.2. Non-congested Areas. Operate over non-congested areas at an altitude at or above 500 ft AGL except over open water or in sparsely populated areas (T-0). Under such exceptions, do not operate aircraft closer than 500 ft. to any person, vessel, vehicle, or structure (T-0). Helicopters in FAA airspace or operating IAW host-nation agreements may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

6.2.3.3. Congested Areas. Operate over congested areas (e.g., cities, towns, settlements) or groups of people at an altitude which ensures at least 1,000 ft. above the highest obstacle within a 2,000-ft. radius (T-0). Helicopters in FAA airspace or operating IAW host-nation agreements may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

6.2.3.4. Flight over National Recreation Areas and Wildlife Refuges. Operate no less than 2,000 ft. AGL (mission permitting) over National Park Service monuments, seashores, lake shores, recreation and scenic riverways; US Fish and Wildlife Service refuges; and US Forest Service wilderness and primitive areas (T-1). Specific areas may require higher altitudes (see FLIP and sectional aeronautical charts).

6.2.3.5. Disaster Areas. Do not operate within designated disaster areas unless the aircraft is assisting in disaster relief efforts (T-0). If the mission requires operation within disaster relief areas, the following procedures must be followed:

6.2.3.5.1. For disaster areas declared to protect persons and property on the surface or in the air from a hazard associated with an incident on the surface, do not fly within the designated area unless participating in hazard relief activities and operating under the direction of the official in charge of on-scene emergency response activities (T-0).

6.2.3.5.2. For disaster areas declared to provide a safe environment for the operation of disaster relief aircraft or to prevent an unsafe congestion of sightseeing aircraft above an incident which may generate a high degree of public interest, do not fly within the designated area unless at least one of the following conditions are met (T-0):

6.2.3.5.2.1. The aircraft is participating in hazard relief activities and is being operated under the direction of the official in charge of on-scene emergency response activities (T-0).

6.2.3.5.2.2. The aircraft is operating under an ATC approved IFR flight plan (T-0).

6.2.3.5.2.3. The operation is conducted directly to or from an airport within the area, or is necessitated by the impracticability of VFR flight above or around the area due to weather or terrain; notification is given to the Flight Service Station (FSS) or ATC facility specified in the NOTAM to receive advisories concerning disaster relief aircraft operations; and the operation does not hamper or endanger relief activities and is not conducted for purpose of observing the disaster (T-0).

6.3. Aircraft Speed.

6.3.1. **Supersonic Flight.** Do not operate aircraft at or above Mach 1 except as specified in AFI 13-201, *Airspace Management* (T-1). See same guidance if inadvertent flight occurs above Mach 1.

6.3.2. In the NAS:

6.3.2.1. Do not exceed 200 knots indicated airspeed (KIAS) at or below 2,500 ft. AGL within 4 NM of the primary airport in Class C or Class D airspace unless authorized by ATC or required to maintain the minimum operating airspeed specified in the aircraft T.O. (T-0).

6.3.2.2. Do not exceed 200 KIAS in the airspace underlying Class B airspace or in a VFR corridor designated through Class B airspace unless required to maintain the minimum operating airspeed specified in the aircraft T.O. (T-0).

6.3.2.3. Do not exceed 250 KIAS below 10,000 ft. MSL (T-0). MAJCOMs may approve operations exceeding 250 KIAS below 10,000 ft. MSL:

6.3.2.3. (AETC) AETC/A3 authorizes maximum airspeeds in accordance with appropriate MDS-specific Volume 3 and the appropriate flight manual.

6.3.2.3.1. Within restricted areas or MOAs.

6.3.2.3.2. Within DoD/FAA mutually developed instrument routes or DoD developed visual routes. (Do not exceed 250 KIAS on slow speed training routes (SR)).

6.3.2.3.3. Within unpublished DoD- and FAA-designated areas or routes. This provision is intended to accommodate speed requirements, as necessary to accomplish the national defense mission, on an interim basis until the area/route can be published.

6.3.2.3.4. During large-scale exercises or short-term special missions with appropriate coordination to ensure awareness of the nonparticipating flying public.

6.3.2.3.5. When the aircraft T.O. requires a higher airspeed. If the airspeed in the T.O. is listed as a range, fly the slowest practical speed in that range. MAJCOM supplements or MDS-specific guidance do not constitute the aircraft T.O.

6.3.3. **Outside the NAS.** Do not exceed 250 KIAS below 10,000 ft. MSL unless: in international airspace and mission requirements dictate, ICAO/host-nation rules permit, or necessary to maintain the minimum safe airspeed in the aircraft T.O. (T-0).

6.3.4. **Holding.** Conduct holding at airspeeds prescribed in FLIP or MDS-specific guidance (T-0).

6.4. Hazard Avoidance.

6.4.1. **Hazardous Weather.** Use all available information to avoid hazardous weather.

6.4.1.1. **“Severe” Conditions.** Do not operate in any forecast or actual severe condition (e.g. severe icing, turbulence) (T-2). See AFH 11-203, *Weather for Aircrews*, for detailed information.

6.4.1.2. **Thunderstorms.** Do not intentionally fly into a thunderstorm (T-2). Damaging lightning strikes, electrostatic discharges, and hail encounters can occur in apparently benign conditions. Do not fly in IMC in the vicinity of actual thunderstorms without operable weather radar (T-2).

6.4.2. **Volcanic Activity.** Unless conducting rescue operations, do not operate within 50 NM of known or reported hazardous volcanic ash (T-2). MAJCOMs may issue guidance on operations including procedures for inadvertent ash encounters and avoidance criteria.

6.4.2.1. Consult an authorized weather source for current Volcanic Ash Advisory Center (VAAC) ash cloud information (or significant meteorological information (SIGMET)) (T-2). If unable to contact an authorized weather source, consider areas depicted on VAAC charts (or SIGMETs) as hazardous. Encounters with volcanic ash will be reported as soon as possible to the controlling agency and aircraft maintenance authorities (T-2). Report volcanic ash encounters to pilot-to-metro service (PMSV) or other weather agencies to ensure rapid dissemination (T-0). See PIREP procedures in the FIH.

6.4.3. **Bird Watch Condition (BWC).**

6.4.3.1. **BWC MODERATE** . Operational commanders will consider restricting formation departures, approaches, and pattern work. To increase the chances of seeing and avoiding birds, avoid hard turns or excessive climb angles. During BWC Phase II periods (see AFI 91-202), accomplish one approach to a full stop unless mission needs warrant additional approaches and sufficient fuel exists to divert if BWC changes to SEVERE (T-3).

6.4.3.2. **BWC SEVERE** . Do not conduct flight operations except in an emergency without OG/CC approval. Arriving aircraft should either hold awaiting a lower BWC or divert (T-3).

6.4.3.3. **Civil or Foreign Fields** . Follow BWC MODERATE procedures if receiving a civilian ATC/Automatic Terminal Information Service (ATIS) hazard advisory to use caution for birds in the vicinity (T-3).

6.4.3.4. NATO countries may use a numerical system to report BWC (see NATO STANAG 3879). Use this intensity conversion: 0-4 for Low, 5 for Medium, 6-8 for Severe. Risk warning updates for NW Europe are available at <https://www.notams.jcs.mil/common/birdtam.html>

6.4.4. **(Added-AETC) Bird/Wildlife Aircraft Strike Hazard (BASH).** OG/CCs may authorize flying in areas that have been forecasted with a severe risk in the AHAS. Aircrew will brief mitigation actions to the operations supervisor (or equivalent mission execution

authority) prior to stepping to the aircraft on a sortie with planned flight through areas forecasted severe. Aircrews may employ some of the following risk management tools:

6.4.4.1. **(Added-AETC)** Selecting another route during mission planning.

6.4.4.2. **(Added-AETC)** Planning an alternate mission if an alternate route shows the same threat.

6.4.4.3. **(Added-AETC)** Planning to enter the route during a period when the AHAS/BAM indicates a lower threat.

6.4.4.4. **(Added-AETC)** Changing the route or leg altitude to one less affected by the avian activity.

6.4.4.5. **(Added-AETC)** Planning to enter or exit at an alternate point if available.

6.4.4.6. **(Added-AETC)** Avoiding flight near food sources (for example, water and landfills).

6.4.5. **(Added-AETC) Bird Hazard Reporting.** As soon as practical, aircrews that encounter a bird hazard will broadcast (on the appropriate frequency) the location, altitude, and intensity of the hazard. Aircrews will also inform the SOF or equivalent about bird hazards encountered as soon as practical.

6.5. Flight in Extreme Barometric Pressures. If unable to display proper altimeter setting (i.e. barometric pressure is lower than 28 or higher than 31 inches of mercury), obtain operations group commander approval for sustained flight in IMC below FL180. See AIM for more information.

6.6. Flight in Colder Than International Standard Atmosphere (ISA) Temperatures. If the air temperature at altitude is lower than ISA, true altitude will be lower than indicated by the barometric altimeter.

6.6.1. In the absence of MAJCOM guidance, when flying IFR, or VFR at night (unaided), over mountainous terrain with the outside air temperature (OAT) colder than ISA minus 10°C, plan to fly at least 1,000 ft above published minimum altitudes obtained from terrain and IFR enroute charts (e.g. minimum enroute altitudes (MEA), minimum obstruction clearance altitudes (MOCA), OROCA's or other minimum safe altitudes during low-levels). MAJCOM/A3s may publish alternate MDS-specific guidance for aircraft that are equipped to measure and display true altitude with the OAT colder than ISA minus 10°C.

6.7. Communications.

6.7.1. **Emergency Frequencies.** If suitably equipped, monitor at least one emergency frequency at all times as mission and operational conditions permit (T-1). Report distress or emergency locator transmitter (ELT) transmissions to ATC (T-1).

6.8. RNAV and RNP Operations.

6.8.1. Navigation Database Operations .

6.8.1.1. Do not modify database waypoints or insert user-defined waypoints on RNAV, RNP, etc. routes or procedures except to change altitude and/or airspeed to assist in complying with an ATC instruction (T-0). Systems which allow additional waypoints on the track may be used.

6.8.1.2. Crosscheck the cleared flight plan against current FLIP, the navigation system textual display, and aircraft map display (if applicable) (T-0). Include confirmation of waypoint sequence, reasonability of track angles and distances, altitude or speed constraints, and identification of fly-by or fly-over waypoints (T-0). Do not execute any procedure for which there is doubt about validity of the navigation database or publications (T-0).

6.8.2. **Random RNAV in the NAS** . Radar monitoring is required on all unpublished (random) RNAV routes (T-0). Refer to FLIP GP.

6.8.3. **Published RNAV routes (Q or T routes)** . If RNAV routes cannot be retrieved from the database, selecting and inserting ALL of the named fixes from the database is permitted.

6.8.4. **Use of RNAV Systems on Conventional Routes and Procedures.** Suitable RNAV systems may be used as a substitute or alternate means of navigation on conventional routes and procedures. MAJCOMs reference FAA Advisory Circular (AC) 90-108, *Use of Suitable Area Navigation (RNAV) Systems on Conventional Routes and Procedures*, and provide operational guidance. Outside the NAS, comply with host-nation/oceanic procedures (T-0).

6.8.4. **(AETC) Use of RNAV Systems on Conventional Routes and Procedures.** Aircrews will follow lead MAJCOM guidance as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus.

6.8.4.1. MAJCOMs may approve the use of other RNAV systems (i.e. not “suitable” as defined in AC 90-108) to enhance IFR navigation on conventional routes and procedures. Underlying conventional NAVAIDS/routes/procedures must be tuned and monitored (T-0).

6.8.4.1. **(AETC)** Aircrews may use mission enhancement systems for en route instrument navigation if the aircraft GPS is used to update a self-contained navigation system (for example, INS or a mission computer) and the aircraft’s position can be verified by a stand-alone system (for example, navigational aids [NAVAID]).

6.8.4.2. “Alternate means” refers to using a suitable RNAV system in lieu of operable conventional NAVAIDS or installed and operable avionics. “Substitute means” refers to using a suitable RNAV system in lieu of out-of-service conventional NAVAIDS or non-installed/non-operable avionics.

6.8.4.3. The following uses are prohibited:

6.8.4.3.1. Substitution for the final approach segment of a VOR/TACAN/NDB approach (T-0).

6.8.4.3.2. Navigation on LOC-based courses (including LOC back-course guidance) without monitoring the raw LOC data (T-0).

6.8.4.3.3. Navigation with DME/DME/IRU systems (without GNSS/WAAS input) unless specifically authorized by NOTAM or FAA guidance (T-0).

6.8.4.3.4. Use of a procedure identified as “NA” without exception by a NOTAM (T-0).

6.8.4.4. Except as prohibited, either substitute or alternate means of navigation may be used as follows:

6.8.4.4.1. Determine position relative to or distance from a VOR, TACAN, NDB, compass locator, or DME fix.

6.8.4.4.2. Determine position relative to or distance from a named fix defined by the intersection of a radial/bearing/course of a VOR/LOC/TACAN/NDB/compass locator.

6.8.4.4.3. Navigate to/from a VOR/TACAN/NDB/compass locator.

6.8.4.4.4. Hold over a VOR/TACAN/NDB/compass locator, or DME fix.

6.8.4.4.5. Fly an arc based upon DME.

6.8.4.5. Operating Requirements and Considerations .

6.8.4.5.1. Retrieve all NAVAIDS, fixes, and procedures from a current navigation database (T-0).

6.8.4.5.2. Tune, identify, monitor, and display the appropriate ground-based NAVAIDs whenever practicable (T-0).

6.8.4.5.3. Notify ATC when substituting for an out-of-service NAVAID (T-0).

6.9. Performance-Based Operations. Performance-based operations may be based on performance of a combination of navigation, communications, and/or surveillance capabilities (e.g., Required Navigation Performance (RNP)).

6.9.1. Do not execute performance-based operations (airspace/routes/procedures) without specific approval (T-2). MAJCOMs will publish special conditions or limitations associated with each performance-based airspace or procedure.

6.9.1. (AETC) Aircrews will follow lead MAJCOM guidance as outlined in the applicable AFI 11-2 MDS-specific volumes, training syllabus, or flight manual.

6.9.2. Follow equipment requirements and/or limitations published in FLIP (T-0).

6.9.3. Advise ATC if an equipment failure or other malfunction results in the loss of aircraft capability to continue operations (T-0).

6.9.4. When unable to comply with performance-based operations, revise the route or delay the operation (T-0).

6.10. Legacy Special Civil Airspace Requirements.

6.10.1. Minimum Navigation Performance Specifications (MNPS) Airspace. MAJCOMs must provide approval and guidance for operations in MNPS Airspace. Comply with applicable FLIP area planning documents (T-0). HQ USAF/A35, through HQ AFFSA/XOF (hqaffsa.xof@us.af.mil), must approve waivers to the requirements of North Atlantic Track Minimum Navigation Performance Specifications (NAT MNPS) and/or Canadian Minimum Navigation Performance Specifications (CMNPS) airspace.

6.10.1. (AETC) Minimum Navigation Performance Specifications (MNPS) Airspace. Aircraft and equipment that have been certified by lead commands for operations within MNPS airspace are considered approved by AETC. Aircrews flying aircraft for which AETC is lead command will comply with the applicable AFI 11-2 MDS-specific, Volume 3.

6.10.2. Reduced Vertical Separation Minimums (RVSM) Airspace. Unless specifically cleared by ATC, do not operate in RVSM airspace without functional RVSM equipment (T-0). Comply with applicable FLIP area planning documents (T-0). Notify ATC as soon as possible if required equipment fails after entering RVSM airspace (T-0).

6.10.2. (AETC) Reduced Vertical Separation Minimums (RVSM) Airspace. Aircraft and equipment that have been certified by lead commands for operations within RVSM airspace are considered approved by AETC. Aircrews flying aircraft for which AETC is lead command will comply with the applicable AFI 11-2 MDS-specific, Volume 3. During preflight planning, aircrews must consider the possibility of not being granted access to RVSM airspace.

6.11. VFR Flight. When in FAA airspace, adhere to the weather minimums listed in Table 6.1. (T-0). When outside of FAA airspace, comply with guidance in FLIP, FCG, or the ICAO VFR weather minimums depicted in [Table 6.2](#). (T-0). When operating under VFR, aircrews must be able to control the aircraft by referencing visual cues from a discernible horizon regardless of cloud clearance requirements (T-0).

6.11.1. Before transition from IFR to VFR, establish appropriate visibility and cloud clearances IAW [Table 6.1](#) or [6.2](#). (T-0).

6.11.2. During transition from VFR to IFR, maintain appropriate visibility and cloud clearance requirements to a minimum IFR altitude until receipt of the IFR clearance (T-0).

6.11.3. Do not operate beneath the ceiling under VFR within the lateral boundaries of controlled airspace designated to the surface for an airport when the ceiling is less than 1,000 feet (T-0).

6.11.3. **(AETC)** Do not operate fixed-wing aircraft VFR when the ceiling is less than 1,500 feet. **Exception:** On a case by case basis, OG/CCs may authorize operations with ceiling of 1,000 feet.

Table 6.1. NAS VFR Cloud Clearance and Visibility Minimums (T-0).

FAA Airspace Class	Prevailing or Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	3 SM	Clear of Clouds
Class C and Class D	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) Below 10,000 ft. MSL	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) At or above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal

Class E (Helicopter) Below 10,000 ft. MSL	3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E (Helicopter) At or above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
Class G (Helicopter) Below 1,200 ft. AGL	Day: 1/2 SM Night: 1 SM	Clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstructions in time to avoid a collision.
Class G (Helicopter) Above 1,200 ft. AGL and Below 10,000 ft. MSL	Day: 1 SM Night: 3 SM	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class G (Helicopter) Above 1,200 ft. AGL and Above 10,000 ft. MSL	5 SM	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
NOTE: When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions, if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid a collision.		

Table 6.2. ICAO VFR Cloud Clearance and Visibility Minimums (T-0).

ICAO Airspace Class	Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	Clear of clouds
Class C, D, and E	Same as Class B	1,500 m horizontal 300 m (1,000 ft.) vertical
Class F and G (Fixed-wing) Above 900 m (3,000 ft.) MSL or above 300 m (1,000 ft.) above terrain, whichever is higher	Same as Class B	Same as Class C, D, and E.
Class F and G (Fixed-wing) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs	Same as Class C, D, and E.
Class F (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical.

Class F and G (Helicopter) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs (See NOTE)	Clear of cloud and in sight of the surface.
Class G (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical
NOTE: When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions, if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid a collision.		

Chapter 7

ARRIVAL

7.1. Weather.

7.1.1. **Destination Weather Update.** Obtain the latest destination airport conditions prior to beginning descent or commencing an approach (T-1).

7.1.2. **Required Approach Minimums.** Do not begin a descent if destination weather is below the following required landing minimums:

7.1.2.1. For a straight-in or sidestep approach, the required visibility minimums (T-1).

7.1.2.2. For a circling approach, both the required ceiling and visibility minimums (T-1).

7.1.3. **Changes to Weather During Arrivals.** If the reported weather decreases below minimums after starting a descent, receiving radar vectors for an approach, or established on any segment of an approach prior to the missed approach point (MAP), the approach may be continued to the MAP and either execute a missed approach or continue to land if conditions in [paragraphs 7.5.2](#) and [7.5.3](#) are met.

7.1.3. (AETC) **Changes to Weather During Arrivals.** The PIC will ensure the aircraft has sufficient fuel to go missed approach and land at the alternate airfield with required reserves.

7.1.4. **Approach or Landing Near Hazardous Weather.** Do not fly an approach or land at an airport where thunderstorms or other hazardous conditions are producing hail, strong winds, gust fronts, heavy rain, lightning, wind shear, or microbursts (T-2).

7.1.5. Landing Criteria.

7.1.5.1. **Fixed-Wing.** MAJCOMs may authorize Category I Instrument Landing System (ILS) approaches to less than 2400 RVR at locations without Touchdown Zone/Centerline Lighting (TDZ/CL) (or when such system is inoperative) provided the approach is flown using guidance from an approved flight director, heads-up display (HUD), or coupled to an autopilot flown to a Decision Altitude (DA). In addition to MAJCOM approval, authorization must be stated on the instrument approach procedure (IAP) or be published in the inoperative components or visual aids table of the TPP (T-0).

7.1.5.1. (AETC) **Fixed-Wing.** Aircrews will follow lead MAJCOM guidance as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus.

7.1.5.1.1. **Category I (1800 RVR or greater)** . Touchdown zone RVR must be equal to or greater than the specified minimums on the IAP (T-0).

7.1.5.1.2. **Category II (1200 to less than 1800 RVR)** . Touchdown zone RVR must be equal to or greater than the specified minimums on the IAP (T-0).

7.1.5.1.3. **Category III (RVR less than 1200)** . Touchdown, midfield, and rollout RVR must be equal to or greater than the specified minimums on the IAP (T-0). MAJCOMs will publish Category III RVR requirements if applicable.

7.1.5.1.3. (AETC) **Category III (RVR less than 1200).** Aircrews will follow lead MAJCOM guidance as outlined in the applicable AFI 11-2 MDS-specific volumes or training syllabus.

7.1.5.2. **Helicopter.** Category A minimums may be used regardless of approach speed. Additionally, visibility minimums may be reduced by one-half, but no lower than 1/4 SM PV or 1,200 ft. RVR (T-0). Apply any inoperative approach lighting visibility correction before reducing minimums (T-0). Do not reduce the visibility minimums on Copter, Category II, Category III, and circling procedures; or if “Visibility Reduction by Helicopters NA” is annotated on the procedure (T-0). Apply airspeed limitations IAW **Table 7.1.** (T-0).

Table 7.1. Helicopter Use of Approach Procedures (T-0).

Procedure	Helicopter Visibility Minimums	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non-Copter)	The greater of: 1. one-half the Category A visibility minimums, or 2. ¼ SM visibility, or - 1200 RVR	As published for Category A	Initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 knots indicated airspeed (KIAS) at the missed approach point (MAP) in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS when on a published route/track
Global Positioning System (GPS) Copter Procedure	As published	As published	90 KIAS when on a published route or track, EXCEPT 70 KIAS when on the final approach or missed approach segment and, if annotated, in holding. Military procedures are limited to 90 KIAS for all segments.

7.2. Cold Weather Altitude Corrections. Add the values derived from the FIH Temperature Correction Chart to the published procedure altitudes IAW **Table 7.2.** (T-0). Unless otherwise directed by MAJCOM, advise ATC if any applied correction exceeds 80 ft.

7.2.1. Do not apply a temperature correction to an ATC-assigned altitude (T-0). Radar vectoring altitudes assigned by ATC in the NAS are not temperature compensated and may be queried or refused if obstacle clearance is in doubt.

Table 7.2. Cold Weather Altitude Corrections (T-1).

Altimeter Setting Source Temperature	Published IAP	IAP in mountainous terrain	If procedure turn or intermediate approach altitude on the IAP is ≥ 3000 ft above the altimeter setting source (N/A for High-Alt IAF or if only the missed approach altitude is ≥ 3000 ft)
At or Below 32° F / 0° C	Correct all altitudes inside FAF or below 1,000 ft. AGL	Correct all altitudes on the IAP	
At or Below -22°F / -30° C			
NOTE: IAP includes minimum sector altitudes, missed approach altitudes, ESA, MSA, and DME arcs.			

7.3. Types of Arrivals.

7.3.1. Conventional Arrivals. Fly these procedures using the appropriate conventional NAVAID(s) as the primary means of navigation except as authorized with approved RNAV equipment (T-0); see [paragraph 6.9](#).

7.3.2. RNAV/RNP/GNSS Arrivals. Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

7.3.3. MAJCOM Certified Procedure. Fly these procedures as authorized by the MAJCOM.

7.4. Types of Approaches.

7.4.1. NDB/VOR/TACAN/ILS Approaches. Fly these procedures using the appropriate conventional NAVAID(s) as the primary means of navigation except as authorized with approved RNAV equipment (T-0); see [paragraph 6.9](#).

7.4.2. RNAV/RNP/GNSS Approaches. Retrieve RNAV/RNP/GNSS procedures in their entirety by procedure name from a current navigation database and compare against approved publications (T-0).

7.4.3. Self-Contained Approaches (SCA). SCAs are approved for IMC when developed by TERPS authority IAW AFI 11-230 and approved for use by the MAJCOM. When unable to develop a procedure IAW AFI 11-230 by a TERPS authority, see paragraph 7.4.6.

7.4.3. (AETC) Self-Contained Approaches (SCA). Units will follow the guidance in the applicable AFI 11-2 MDS-specific, Volume 3, for self-contained approach criteria and procedures for their particular aircraft. The use of unpublished self-contained approaches in IMC is prohibited for all aircraft without AETC/A3V approval.

7.4.4. Precision Runway Monitoring (PRM) Approaches. Do not fly PRM approaches unless the aircrew and the aircraft are properly certified by the MAJCOM (T-0). If unable to

accept a PRM approach clearance, contact Air Traffic Control System Command Center at 1-800-333-4286 to coordinate an arrival time. Without coordination, expect an ATC-directed divert to a non-PRM airport.

7.4.4. (AETC) Precision Runway Monitoring (PRM) Approach. Aircrews are authorized to fly PRM approaches only if aircrews are properly trained according to [paragraph 7.4.4.3](#) (Added) and the aircraft has two operable VHF radios. If aircrews are unable to accept a PRM approach, notify ATC at least 200 nautical miles from the airport and expect extensive delays.

7.4.4.1. TCAS II equipped aircraft will fly the ILS PRM approach in TA/RA mode (T-0).

7.4.4.2. If an ATC breakout and a TCAS RA are received simultaneously, or shortly after one another, turns will be in accordance with ATC breakout instructions while vertical corrections will be in accordance with the TCAS system (T-0).

7.4.4.2. **(AETC)** All breakouts from a PRM approach must be hand flown with autopilot disengaged.

7.4.4.3. **(Added-AETC)** Pilots and CSOs must be trained on PRM approaches before conducting them. This is a one-time training requirement and will consist of the following:

7.4.4.3.1. **(Added-AETC)** Review of the most current FAA/AIM PRM training information located at http://www.faa.gov/training_testing/training/prm/.

7.4.4.3.2. **(Added-AETC)** Review of the ILS PRM PowerPoint® training presentation available at the AETC/A3V SharePoint site <https://eis.aetc.af.mil/hq/A23/A3V/default.aspx> (click on “Other Related Training Documents” then “ILS PRM Briefing”).

7.4.4.4. **(Added-AETC)** ANG and AFRC pilots flying in AETC may apply FAA-approved company PRM training received while employed by a Part 121 or Part 135 operator.

7.4.5. Authorization Required Procedures. Do not fly any RNP “Authorization Required”, conventional “Special Authorization”, or any procedure with a note requiring specific authorization without MAJCOM training and operational approval (T-0).

7.4.5. (AETC) Authorization Required Procedures. Aircraft and equipment that have been certified by lead commands for operations within required navigation performance (RNP) RNAV airspace are considered approved by AETC. Aircrews will accomplish all lead command MDS-specific training. Aircrews flying aircraft for which AETC is lead command will comply with the applicable AFI 11-2 MDS-specific, Volume 3.

7.4.6. MAJCOM Certified Procedure. MAJCOM/A3s may develop and authorize an approach procedure for use in IMC for their aircraft. Complete MAJCOM-specific training before using such procedures (T-1). These procedures may be performed:

7.4.6.1. With appropriate airspace authority approval (e.g. ATC, Airspace Control Order (ACO), host-nation agreement); or,

7.4.6.2. In conjunction with a compatible published instrument approach procedure; or,

7.4.6.3. In SUA; or,

7.4.6.4. Under VFR.

7.4.7. **Radar approaches.** Fly these approaches as authorized by MAJCOM.

7.4.7. (AETC) **Radar Approaches.** AETC aircrews are authorized to fly Precision Approach Radar (PAR)/Airport Surveillance Radar (ASR) approaches. The PAR provides the pilot with precise course, glideslope, and range information; the ASR provides course and range information and is classified as a non-precision approach. During an ASR and upon request, the controller will provide recommended altitudes on final to the last whole mile that is at or above the published MDA.

7.5. Approach Minimums.

7.5.1. **Determining Decision Height (DH)/Decision Altitude (DA)/Minimum Descent Altitude (MDA).** Determine minimum approach altitudes with the barometric altimeter except when directed by MAJCOM or aircraft T.O. guidance.

7.5.1. (AETC) **Determining Decision Height (DH)/Decision Altitude (DA)/Minimum Descent Altitude (MDA).** Aircrews will follow AFI 11-2 MDS-specific guidance for the use of radar altimeters during instrument approaches. If guidance is not provided, aircrews will set radar altimeters to the appropriate height above touchdown (HAT) or height above aerodrome (HAA) for the approach being flown.

7.5.2. **Descent Below DH/DA/MDA.** Do not descend below DH/DA/MDA until sufficient visual reference with the runway environment has been established and in a position to execute a safe landing (T-2).

7.5.3. **Descent Below 100 ft.** Do not descend below 100 ft. above the threshold elevation (THRE) or touchdown zone elevation (TDZE) using the approach lights as a reference unless the red termination bars or the red side row bars are visible and identifiable (N/A on CAT III approaches) (T-2).

7.6. **Inoperative Approach Lighting System (ALS).** Unless [paragraph 3.16.1](#) applies, when the runway ALS (or any portion, but not including sequenced flashers or visual glide slope indicators) as depicted on the procedure is inoperative, increase the published visibility minimums of an instrument approach by one of the following:

7.6.1. As directed by the inoperative components table in the TPP (T-0); or,

7.6.2. As stated on IAP, NOTAMs, ATIS, or other airport information source (T-0); or,

7.6.3. If no other guidance is provided, increase published visibility by ½ mile (T-0).

7.7. **Landing Gear Reporting Procedures.** Retractable gear aircraft will report gear down status to ATC or runway supervisory unit after extending the landing gear (T-2). This report shall be made during any approach prior to crossing the runway threshold (T-2).

7.8. Missed Approach.

7.8.1. **Executing the Missed Approach.** If at the MAP/DH/DA and not in a position to execute a safe landing, immediately execute the appropriate missed approach procedure or ATC-issued climbout instructions (T-2). If beyond the MAP/DH/DA, coordinate with ATC for climb-out instructions (T-1).

7.8.1.1. The missed approach procedure should not be initiated until over the MAP/DH/DA unless otherwise cleared by ATC. Climbing prior to the MAP/DH/DA is permitted, but ATC should be advised as soon as practical.

7.8.1.2. During an emergency, if unable to comply with the missed approach routing or climb requirements, coordinate alternate climbout instructions to ensure obstacle clearance.

7.8.2. Missed Approach Climb Performance. Prior to starting any instrument approach, ensure compliance with the following missed approach climb gradients:

7.8.2.1. Climb performance must meet or exceed 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude (T-0).

7.8.2.2. Multi-Engine Fixed-Wing Aircraft. Ensure the aircraft can meet 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude with OEI (T-2).

7.8.2.2.1. If unable to meet published missed approach climb gradient OEI, and operationally necessary, the MAJCOM/A3 may authorize subtraction of up to 48' /NM from the missed approach climb gradient.

7.8.2.2.1. (AETC) If operationally necessary, AETC/A3 authorizes the operations supervisor (or equivalent mission execution authority supervisor) to allow the PIC to ensure the aircraft vertically clears all obstacles along the missed approach path OEI by subtracting up to 48' /NM from the published (or standard) climb gradient.

7.8.2.3. Helicopter. Climb performance must meet or exceed 200 ft/NM or the published missed approach climb gradient, whichever is higher, to an appropriate IFR altitude which ensures obstacle clearance; or meet 400 ft/NM for "Copter Only" approaches (T-0).

7.9. Land and Hold Short Operations (LAHSO). Fixed-wing pilots are prohibited from accepting LAHSO clearances (T-2).

7.9.1. Aircrews may passively participate in LAHSO (land or take-off when another aircraft has been given a LAHSO clearance). The PIC is the final authority whether to take-off, land, or continue a touch-and-go when a merging aircraft has received a LAHSO clearance.

7.10. Reduced Same Runway Separation (RSRS). MAJCOMs may approve non-formation RSRS operations. Host ATC and user units will publish RSRS procedures (T-2). MAJCOM approval shall include MDS-specific RSRS criteria governing similar and dissimilar landing/touch-and-go/low approach operations.

7.10. (AETC) Reduced Same Runway Separation (RSRS). RSRS operations are authorized. RSRS Criteria are listed in the AETC Supplement to AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs* and AETC 11-204, *Runway Supervisory (RSU) Operations*.

7.11. Helicopter Landing Areas. Helicopters may operate from/to other than established landing areas (e.g., fields, highways, parks) if conducting an operational or training mission. For training missions, permission must be received to use the area and safeguards must exist to permit operations without hazard to persons or property (T-3).

7.12. Landing With Hot Armament. MAJCOMs will ensure units publish procedures for aircraft operations with hot armament.

7.12. (AETC) Landing with Hot Armament. Units will develop and follow local published procedures for handling aircraft that land with hot armament.

7.12.1. Before landing with hot armament or practice munitions at any airfield where such procedures are unfamiliar, aircrew must:

7.12.1.1. Advise the tower of the circumstances (T-0);

7.12.1.2. Advise transient alert and other appropriate agencies (T-0); and,

7.12.1.3. Request taxi instructions to a designated safe (de-arm) area (T-0).

7.12.2. After landing, aircrew must:

7.12.2.1. Avoid taxiing into an area that could threaten personnel or equipment (T-0).

7.12.2.2. Ensure the ground crew is aware of the armament onboard (T-0); and,

7.12.2.3. Request assistance from the nearest DoD facility, if necessary.

7.13. Touch-and-Go Landings. MAJCOMs will publish guidance addressing operating conditions and qualifications.

7.13. (AETC) Touch-and-Go Landings. Aircrews may accomplish touch-and-go landings if required for continuation training, as defined in the applicable AFI 11-2 MDS-specific, Volume 1; formal syllabus training requirements, as defined in the applicable training syllabus; or functional or operational test flights, as directed by the applicable technical order. Aircrews will follow guidance for touch-and-go landings in the applicable AFI 11-2 MDS-specific volumes, training syllabus, or technical order flight manual.

7.14. Turns after Touch-and-Go or Low Approach. When operating IFR, do not turn after a touch-and-go or low approach until at least 400 ft. above the DER elevation, at a safe airspeed, and past the end of the runway (if visible) unless specifically cleared by the controlling agency, required by a published procedure, or when executing a closed pattern (T-1).

7.15. Traffic Pattern Procedures.

7.15.1. Fly traffic patterns IAW with control tower instructions, local flying procedures, AFMAN 11-217 series, or FLIP (T-0).

7.15.2. At airports with no control tower, follow the standard light signals or visual indicators that prescribe the direction of traffic and landing runway (T-0).

7.15.3. Helicopters should avoid the flow of fixed-wing aircraft unless operating at a compatible airspeed.

7.16. Practice Instrument Approaches Under VFR. MAJCOM approval is required to practice instrument approaches under VFR. The following restrictions apply:

7.16. (AETC) Practice Instrument Approaches Under VFR. OG/CC or equivalent may approve practice instrument approaches under VFR.

7.16.1. Maintain VFR cloud clearances and visibilities IAW Tables 6.1 and 6.2 (T-0);

7.16.2. Use terminal radar service when available (T-1);

7.16.3. Make all position reports IAW AFMAN 11-217 series (T-1); and

7.16.4. Request ATC clearance to fly the published missed approach (T-0).

7.17. Night VMC Approaches. In the absence of MAJCOM guidance, fly the most precise IAP available (T-1).

7.17. (AETC) Night VMC Approaches. Unless otherwise required by a formal syllabus or currency or training requirements (as defined in the applicable AFI 11-2 MDS-specific, Volume 1), the preferred night instrument approach procedures (in order of precedence) for fixed-wing aircraft are as follows: precision approach, non-precision approach, and VFR straight-in and VFR rectangular pattern. When available, monitor the glide slope position with the visual descent path indicator during visual approaches and with the instrument landing system (ILS) glide slope during instrument approaches.

SCOTT A. VANDER HAMM, Maj Gen, USAF
Assistant DCS, Operations

(AETC)

SAMUEL P. MILAM, Colonel, USAF
Deputy Director of Intelligence, Operations, and
Nuclear Integration

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFH 11-203V1, *Weather for Aircrews*, 12 Jan 12

AFH 11-203V2, *Weather for Aircrews*, 13 Aug 15

AFI 10-206, *Operational Reporting*, 11 Jun 14

AFI 10-707, *Spectrum Interference Resolution Program*, 22 Dec 15

AFI 11-202V1, *Aircrew Training*, 22 Nov 10

AFI 11-209, *Aerial Event Policy and Procedures*, 4 May 06

AFI 11-214, *Air Operations Rules and Procedures*, 14 Aug 12

AFI 11-215, *USAF Flight Manuals Programs (FMP)*, 22 Dec 08

AFI 11-218, *Aircraft Operations and Movement on the Ground*, 28 Oct 11

AFI 11-230, *Instrument Procedures*, 27 Sep 13

(Added-AETC) AFI 11-253, *Managing Off-Station Purchases of Aviation Fuel and Ground Services*, 19 Aug 13

AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program*, 25 Feb 09

AFI 11-301V4, *Aircrew Laser Eye Protection (ALEP)*, 21 Feb 08

AFI 11-401, *Aviation Management*, 10 Dec 10

AFI 11-402, *Aviation and Parachutist Service, Aeronautical Ratings and Aviation Badges*, 13 Dec 10

AFI 11-403, *Aerospace Physiological Training Program*, 30 Nov 12

AFI 11-409, *High Altitude Airdrop Mission Support Program*, 9 Sep 15

AFI 11-502V3, *Small Unmanned Aircraft Systems Operations*, 21 Aug 15

AFI 13-201, *Airspace Management*, 21 Aug 12

(Added-AETC) AFI 13-204, *Volume 3, Airfield Operations Procedures and Programs*, 1 Sep 10

AFI 16-1301, *Survival, Evasion, Resistance and Escape (SERE) Program*, 6 Sep 06

AFI 33-324, *The Air Force Information Collections and Reports Management Program*, 6 Mar 13

AFI 33-360, *Publications and Forms Management*, 01 Dec 15

AFI 48-123, *Medical Examination and Standards*, 5 Nov 13

AFI 62-601, *USAF Airworthiness*, 11 Jun 10

AFI 63-112, *Cockpit Working Groups*, 9 Aug 06

AFI 63-137, *Assurance of Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM), Navigation Safety, and Next Generation Air Transportation System (NextGen) Performance*, 29 Mar 12

AFI 65-503, *US Air Force Cost and Planning Factors*, 4 Feb 94

AFI 91-202, *The US Air Force Mishap Prevention Program*, 24 Jun 15

AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials*, 11 Nov 94

AFMAN 11-217V1, *Instrument Flight Procedures*, 22 Oct 10

AFMAN 11-217V2, *Visual Flight Procedures*, 22 Oct 10

AFMAN 11-217V3, *Supplemental Flight Information*, 23 Feb 09

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFMAN 91-223, *Aviation Safety Investigations and Reports*, 16 May 13

AFPAM 11-216, *Air Navigation*, 1 Mar 01

AFPD 11-2, *Aircrew Operations*, 19 Jan 12

AFPD 11-3, *Aircrew Flight Equipment (AFE)*, 24 Sep 13

AFPD 11-4, *Aviation Service*, 1 Sep 04

FAA Advisory Circular 90-108, *Use of Suitable Area Navigation (RNAV) Systems on Conventional Routes and Procedures*

FAA Advisory Circular 120-76C, *Guidelines for the Certification, Airworthiness, and Operational Use of Electronic Flight Bags*

FAA AIM *Aeronautical Information Manual*

FAA Joint Order 7400.2J *Procedures for Handling Airspace Matters*

FAA Joint Order 7610.4T *Special Operations*

FAA Order 7110.118A *Land and Hold Short Operations (LAHSO)*

ICAO Doc 9613, *Performance Based Navigation (PBN) Manual*

NATO STANAG 3879, *Birdstrike Risk/Warning Procedures*

SS521-AG-PRO-010 *U.S. Navy Diving Manual*

Title 14 Code of Federal Regulations Parts 91, *Air Traffic and General Operating Rules*, Parts 121 and 135, *Air Carriers and Operators for Compensation or Hire: Certification and Operations*

T.O. 42C-1-2 *Anti-Icing De-Icing and Defrosting of Parked Aircraft*

Prescribed Forms

(Added-AETC) AETC Form 856, *Mission Data*

AF Form 70, *Pilot's Flight Plan and Flight Log*

AF Form 72, *Air Report (AIREP)*

DD Form 175, *Military Flight Plan*

DD Form 1801, *DoD International Flight Plan*

Adopted Forms

AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

(Added-AETC) AF Form 4327a, *Crew Flight (FA) Authorization*

(Added-AETC) AF Form 4327, *ARMS Fighter Authorization*

AF Form 847, *Recommendation for Change of Publication*

DD Form 2131, *Passenger Manifest*

Abbreviations and Acronyms

AC—Advisory Circular

(Added-AETC) **ADCF**—Air Defense Control Facility

ADIZ—Air Defense Identification Zone

ADS-B—Automatic Dependent Surveillance-Broadcast

AEO—All Engines Operating

(Added-AETC) **AFCS**—automated flight control system

AFSA—Air Force Flight Standards Agency

AFH—Air Force Handbook

AFI—Air Force Instruction

AFJI—Air Force Joint Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFREP—Air Force Representative to the FAA

AGCAS—Automatic Ground Collision Avoidance System

AGL—Above Ground Level

(Added-AETC) **AHAS**—Avian Hazard Advisory System

AIM—Aeronautical Information Manual

AIR CARD—Aviation Into-Plane Reimbursement Card

AIREP—Air Report

ALS—Approach Lighting System

ALTRV—Altitude Reservation

(Added-AETC) **AMC**—Air Mobility Command

ANG—Air National Guard

AP—Area Planning

ARCP—Air Refueling Control Point

ARTCC—Air Route Traffic Control Center

ASAP—Aviation Safety Action Program

ASRR—Airfield Suitability and Restrictions Report

ATC—Air Traffic Control

ATCAA—Air Traffic Control Assigned Airspace

ATIS—Automatic Terminal Information Service

(Added-AETC) BAM—bird avoidance model

BWC—Bird Watch Condition

C2—Command and Control

CCMD—Combatant Command

CFIT—Controlled Flight Into Terrain

CFR—Code of Federal Regulations (Formerly FARs)

CMNPS—Canadian Minimum Navigation Performance Standards

CNS—Communications, Navigation, Surveillance

COA—Certificate of Authorization

COMAFFOR—Commander Air Force Forces

(Added-AETC) CSO—combat systems officer

DA—Decision Altitude

DCS—Decompression Sickness

DER—Departure End of the Runway

DH—Decision Height

DINS—Defense Internet NOTAM Service

DME—Distance Measuring Equipment

EGI—Embedded GPS/INS

EGPWS—Enhanced Ground Proximity Warning System

ELP—Emergency Landing Pattern

ELT—Emergency Locator Transmitter

ESA—Emergency Safe Altitude

ETA—Estimated Time of Arrival

ETP—Equal Time Point
FAA—Federal Aviation Administration
FAAO—Federal Aviation Administration Order
FBO—Fixed-Base Operator
FCB—Flight Crew Bulletin
(Added-AETC) FCF—functional check flight
FCG—Foreign Clearance Guide
FCIF—Flight Crew Information File
FDE—Fault Detection and Exclusion
FDP—Flight Duty Period
FIH—Flight Information Handbook
FL—Flight Level
FLIP—Flight Information Publication
FMC—Flight Management Computer
FMS—Flight Management System
FOD—Foreign Object Damage
FSO—Flight Safety Officer
FSS—Flight Service Station
GCAS—Ground Collision Avoidance System
GNSS—Global Navigation Satellite System
GP—General Planning
GPS—Global Positioning System
GPWS—Ground Proximity Warning System
HDD—Head-Down Display
HEEDS—Helicopter Emergency Egress Device System
HMD—Helmet-Mounted Display
HUD—Head-Up Display
IAP—Instrument Approach Procedure
ICAO—International Civil Aviation Organization
IFR—Instrument Flight Rules
ILS—Instrument Landing System
IMC—Instrument Meteorological Conditions

INS—Inertial Navigation System
(Added-AETC) IP—instructor pilot
IR—Infrared
IR—IFR Military Training Routes
ISA—International Standard Atmosphere
JO—Joint Order
JSIR—Joint Spectrum Interference Resolution
KIAS—Knots Indicated Airspeed
KTAS—Knots True Airspeed
LAHSO—Land and Hold Short Operations
LNAV—Lateral Navigation
LOA—Letter of Agreement
MAJCOM—Major Command
MAP—Missed Approach Point
MDA—Minimum Descent Altitude
MDS—Mission Design Series
MEA—Minimum Enroute Altitude
MEP—Mission Essential Personnel
MNPS—Minimum Navigation Performance Specifications
MOA—Military Operations Area
MOCA—Minimum Obstruction Clearance Altitude
MSA—Minimum Safe Altitude
MSL—Mean Sea Level
MTR—Military Training Route
(Added-AETC) NAF—numbered Air Force
NAS—National Airspace System
NAT—North Atlantic Track
NAVAID—Navigational Aid
NM—Nautical Mile
NOTAM—Notices to Airmen
NVD—Night Vision Device
OAT—Outside Air Temperature

ODP—Obstacle Departure Procedure

OEI—One Engine Inoperative

(Added-AETC) OG/CC—operations group commander

OROCA—Off Route Obstruction Clearance Altitude

ORTCA—Off Route Terrain Clearance Altitude

OTC—Over-the-Counter

(Added-AETC) OWS—operational weather squadron

PANS-OPS—Procedures for Air Navigation Services-Aircraft Operations

PAO—Public Aircraft Operations

PBN—Performance Based Navigation

PBO—Performance Based Operations

PED—Portable Electronic Device

PFR—Primary Flight Reference

PIC—Pilot in Command

PIREP—Pilot Report

PMSV—Pilot-to-Metro Service

PPS—Precise Position Service

PRM—Precision Runway Monitoring

PV—Prevailing Visibility

RA—Resolution Advisory

RAIM—Receiver Autonomous Integrity Monitoring

RM—Risk Management

RNAV—Area Navigation

RNP—Required Navigation Performance

(Added-AETC) RNP APCH—Required Navigation Performance Approach

(Added-AETC) RNP AR APCH—Required Navigational Performance Authorization
Required Approach

(Added-AETC) RON—remain(ing) overnight

(Added-AETC) ROS—Report of Survey

RPA—Remotely Piloted Aircraft

RSRS—Reduced Same Runway Separation

RSU—Runway Supervisory Unit

RTRL—Reduced Takeoff Runway Length

RVR—Runway Visual Range
RVSM—Reduced Vertical Separation Minimum
SAR—Search and Rescue
SARP—Standards and Recommended Practices
SBAS—Satellite-Based Augmentation System
SCA—Self-Contained Approach
SDP—Special Departure Procedures
SERE—Survival, Evasion, Resistance, and Escape
SFO—Simulated Flameout
SID—Standard Instrument Departure
SIGMET—Significant Meteorological Information
SM—Statute Mile
SMGCS—Surface Movement Guidance and Control System
(Added-AETC) **SOF**—supervisor of flying
SPINS—Special Instructions
SPS—Standard Position Service
(Added-AETC) **SQ/CC**—squadron commander
SR—Slow Speed Low Altitude Training Routes
(Added-AETC) **STIF**—supplemental theater information file
SUA—Special Use Airspace
SVFR—Special Visual Flight Rules
TA—Traffic Alert
TAWS—Terrain Awareness and Warning System
TCAS—Traffic Alerting and Collision Avoidance System
TDZ/CL—Touchdown Zone/Centerline Lighting
TDZE—Touchdown Zone Elevation
TEMPO—Temporary
TERPS—Terminal Instrument Procedures
TFR—Temporary Flight Restriction
THRE—Threshold Elevation
T.O—Technical Order
TOLD—Takeoff and Landing Data

TPP—Terminal Procedures Publication
(Added-AETC) TRG—training group
TSO—Technical Standard Order
UAS—Unmanned Aircraft System
(Added-AETC) UFT—undergraduate flying training
USCG—United States Coast Guard
USG—United States Government
VAAC—Volcanic Ash Advisory Center
VCOA—Visual Climb Over Airport
VFR—Visual Flight Rules
VMC—Visual Meteorological Conditions
VNAV—Vertical Navigation
VR—VFR Military Training Routes
WAAS—Wide Area Augmentation System
(Added-AETC) WG/CC—wing commander
WX—Weather

Terms

Aerobatics—Intentionally performed spins, vertical recoveries, and other maneuvers that require pitch and bank angles greater than 90 degrees.

Aircrew Member—An individual, designated on the Flight Authorization who is an aircrew member as explained in AFPD 11-4, *Aviation Service*, AFI 11-402, *Aviation and Parachutist Service*, *Aeronautical Ratings and Aviation Badges*, and is assigned to a position listed in AFI 65-503, *US Air Force Cost and Planning Factors*, and is designated on orders to fulfill specific aeronautical tasks.

Aircrew or Crew—The full complement of military, civilian and contract personnel required to operate a USAF aircraft and complete an assigned mission.

Air Force Flight Standards Agency (AFFSA)—HQ USAF Field Operating Agency charged with the development, standardization, evaluation and certification of procedures, equipment and standards to support global flight operations.

Anti-collision Lights—The primary flashing light system on the aircraft intended to attract the attention of others to enhance sense-and-avoid operations.

ASAP—An identity protected, self-reporting system designed to encourage the voluntary reporting of issues that increase risk to flight operations.

Augmented Aircrew—A basic aircrew supplemented by additional aircrew members to permit in-flight rest. If the basic aircrew requires only one pilot and a second qualified pilot (includes

pilots enrolled in an AETC formal aircrew training course) is designated an aircrew member to augment pilot duties, the crew can be considered augmented.

Automatic Dependent Surveillance-Broadcast—A system of two avionics components consisting of a GPS and a transponder (usually Mode S) which will replace radar as the primary surveillance method worldwide. ADS-B consists of two different services: “ADS-B Out” transmits aircraft position to ATC and other aircraft, and “ADS-B In” which receives position of other aircraft and may include separation applications.

Basic Aircrew—Aircrew positions as defined in the aircraft T.O. (or MDS-specific AFI) for the normal operation of the aircraft or mission.

Civil Twilight—Evening Civil Twilight is the period that begins at sunset and ends in the evening when the center of the sun’s disk is 6 degrees below the horizon. Morning Civil Twilight begins prior to sunrise when the center of the sun’s disk is 6 degrees below the horizon, and ends at sunrise. Use an authorized weather source, the latest version of the Air Almanac, MAJCOM-approved computer program, or US Naval Observatory data to determine and calculate sun and moon data. Both periods of twilight are considered “day”, unless further restricted by the MAJCOM.

Critical Phase of Flight—In the absence of MAJCOM guidance, this term should include: terminal area operations including taxi, takeoff and landing, low-level flight, air refueling, airdrop, weapons employment, flight using NVDs, tactical/air combat and formation operations (other than cruise), and all portions of any test or functional check flight or any aerial demonstration.

Day—The time between the beginning of morning civil twilight and the end of evening civil twilight, as published in the Air Almanac.

Decision Altitude (DA) / Decision Height (DH)—A specified altitude during a precision approach at which a decision must be made to either continue the approach if the pilot acquires the required visual references, or immediately executes a missed approach. Decision Altitude is referenced to mean sea level and Decision Height is referenced to the threshold elevation.

Diverse Vector Area (DVA)—An area in a radar environment established at the request of Air Traffic that meets TERPS criteria for diverse departures, obstacles and terrain avoidance. Within a DVA, random radar vectors below the MVA/MIA may be issued to departing aircraft.

(Added-AETC) Dual—A flight with two-rated pilots or an IP with a student on an instructional flight.

Emergency Fuel—The point at which it is necessary to proceed directly to the airport of intended landing due to low fuel. Declaration of “emergency fuel” is an explicit statement that priority handling by ATC is both required and expected.

FAA Exemption or Authorization—An official written FAA document which provides the petitioner relief from specified parts of the CFRs.

Fault Detection and Exclusion (FDE)—A RAIM algorithm that can automatically detect and exclude a faulty satellite from the position solution when a sufficient number of redundant satellite measurements are available.

Flight Management Computer (FMC) / Flight Management System (FMS)—An on-board computer system that automates a wide variety of in-flight tasks, to include flight plan management, multi-sensor navigation, aircraft guidance, and performance management.

Formation Flight—More than one aircraft which, by prior arrangement between the pilots, operates as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway. Such a group is treated for ATC purposes as a single aircraft.

Fuel Reserve—The amount of usable fuel that must be carried on each aircraft beyond that required to complete the flight as planned.

Global Navigation Satellite System (GNSS)—A generic term for satellite-based navigation, including GPS, SBAS/WAAS, and any other satellite navigation or augmentation system suitable for aviation use.

Global Positioning System (GPS)—The United States satellite-based radio navigation system that provides a global positioning, navigation, and timing service.

Ground Control Element—Comprises the UAS ground control station, power generation units, communications infrastructure and antenna arrays.

ICAO—The International Civil Aviation Organization (a UN Specialized Agency), headquartered in Montreal, Canada, is the global forum for civil aviation that works to achieve its vision of safe, secure, and sustainable development of civil aviation through cooperation amongst its member States. Promotes understanding and security through cooperative aviation regulation.

Inertial Navigation System (INS)—A self-contained dead reckoning system that senses acceleration along the three axes of the aircraft and calculates the distance traveled from a reference point. Accuracy of the system decreases with time.

(Added-AETC) Instructional Flight—A flight with an instructor and a student enrolled in a formal course of training, a required training flight with a student and an instructor, or a flight with an instructor and a non-current aircrew member.

Instrument Meteorological Conditions (IMC)—Ceiling, visibility, and cloud clearances that do not meet the criteria for VMC.

Land and Hold Short Operations (LAHSO)—Procedures developed to expedite traffic flow at civil and joint-use airports needing additional tools to increase capacity. Allows civilian aircraft to operate on intersecting runways simultaneously.

Lateral Navigation (LNAV)—RNAV non-precision approach providing lateral guidance.

Low Close-in Obstacles—Those obstacles within the Initial Climb Area that require an excessive climb gradient to a climb-to-altitude of 200 ft. or less above the Departure End of Runway elevation or alternate takeoff weather minimums. These obstacles are published in NOTAMs, on the SID chart, or in the IFR Take-off Minimums and (Obstacle) Departure Procedures section ▼ of the terminal procedure booklet. Typical chart notation is: “NOTE: Rwy 17L, tree 5610' from DER, 212' left of centerline, 82' AGL/2723' MSL.”

Minimum Fuel—Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

Minimum Navigation Performance Specification (MNPS)—Implemented in the North Atlantic region between FL285-420 and specifies a number of equipment, training, and procedural requirements. MNPS navigation accuracy is equivalent to RNP 12.6. Dual long-range navigation systems (LRNS) and dual long-range communication systems are required. RVSM is mandatory in MNPS airspace. Aircraft that cannot meet dual LRNS requirements may be accommodated on special routings ("Blue Spruce" routes). Aircraft that cannot meet RVSM requirements are excluded from MNPS airspace unless operating on an ALTRV.

Mode 4—Transponder mode established to enable IFF (Identification Friend or Foe) functions between military aircraft or military aircraft and military ground stations. Uses classified codes, but operates on 1030 MHz and 1090 MHz; the same frequency pair used by the Air Traffic Control Radar Beacon System that civil air traffic uses for Mode 3A/C, Mode S, and TCAS. Mode 4 interrogation signals can suppress civil airborne transponders; therefore all Mode 4 operations in the NAS require prior authorization through the Air Force Frequency Management Agency (AFFMA): affma.cc@pentagon.af.mil.

Mode 5—Performance upgrade to the current Mark XII IFF transponder system. Mode 5 provides new waveforms, new cryptography, more data, and improved radio frequency (RF) link margin to resolve many of the deficiencies identified with Mark XII. It will eventually replace the analog Mode 4 IFF system with digital IFF message formats which embed unprecedented combat relevant data.

Mode S—The primary role of the Mode S transponder is to "selectively" respond to interrogations, as opposed to responding to all interrogations, from a ground sensor or TCAS to provide airborne data information including identification, equipage, and altitude.

Mountainous Terrain—In the absence of other MAJCOM guidance, USAF aircrews shall consider as mountainous those areas defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. In other areas, use 500 ft. surface elevation change over a ½ NM.

National Airspace System (NAS)—The NAS is the common network of *United States* (U.S.) airspace: air navigation facilities, equipment, services, airports or landing areas, aeronautical charts, information/services, rules, regulations, procedures, technical information, manpower, and material. Included are system components shared jointly with the military. *United States*, in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters (within 12 nautical miles) and (2) the airspace of those areas. **Note:** IAW ICAO Article 12 and Annex 2 and 11, the United States has accepted responsibility for providing air traffic services within airspace overlying the high seas beyond 12 miles from the coast (also known as international airspace). These flight information regions of international airspace include: Oakland Oceanic, Anchorage Oceanic, Anchorage Continental, Anchorage Arctic, Miami Oceanic, Houston Oceanic and New York Oceanic. Aircrews should be aware that although they are being provided air traffic services by the FAA, they are operating in international airspace and ICAO SARPS, FLIP, and AFIs are applicable.

Navigation Specification—A set of aircraft and aircrew requirements needed to support performance-based navigation operations within a defined airspace. Comprised of RNAV and RNP specifications.

Night—The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac.

Non-Standard Formation—Operations under any of the following conditions: 1. When the flight leader has requested and ATC has approved other than standard formation dimensions (≤ 1 NM lateral separation or ≤ 100 ft. vertical separation), 2. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement, 3. When operations are conducted in airspace specifically designed for a special activity.

OROCA—An off-route altitude which provides obstruction clearance with a 1,000 ft. buffer in non-mountainous terrain areas and a 2,000 ft. buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

ORTCA—An off-route altitude that provides terrain clearance with a 3,000 ft. buffer from terrain. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage. This altitude is used on enroute charts covering those areas outside the United States.

P-Airfield—Civil airport that permits use by transient military aircraft.

Passenger—An individual onboard the aircraft who is not on the flight authorization. See AFI 11-401 for further guidance.

Performance-Based Operations (PBO)—Operations based on stated aircraft and aircrew performance requirements addressing communications, navigation, and surveillance systems.

Portable Electronic Devices (PEDs)—Portable electronic devices which are not installed on an aircraft as standard equipment. PEDs may include temporary mounts, a data interface, an external antenna, and may require aircraft electrical power.

Precise Positioning Service (PPS)—GPS service available to authorized users via the encrypted P(Y) code ranging signal. PPS can offer greater accuracy and resistance to jamming and spoofing.

Predictive RAIM (P-RAIM)—Using a standard set of algorithms, the availability of RAIM may be determined based on the satellite coverage expected at an aircraft's ETA. Due to terrain masking and other factors (e.g., satellite fails after RAIM prediction made), P-RAIM does not guarantee there will be sufficient satellite coverage on arrival. P-RAIM does not have to reside in the GPS receiver. It can be provided by FAA Flight Service (US NAS only) and other ground-based RAIM algorithms.

Prevailing Visibility (PV)—The greatest horizontal visibility observed throughout at least half of the horizon circle. It need not be continuous throughout 180 consecutive degrees.

Primary Flight Reference (PFR)—Any display or suite of displays and instruments used to present the basic flight information needed for immediate control of the aircraft. PFR includes attitude (climb/dive angle or pitch and vertical velocity, bank angle, and a prominent horizon reference), indicated or calibrated airspeed, barometric altitude, heading, appropriate fault

indications, and the capability to recognize and recover from an unusual attitude. UAS PFR includes link status, flight guidance mode, and logic.

PRM Approach—An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 ft. and the parallel runways have a PRM system that permits simultaneous independent ILS approaches.

Procedures for Air Navigation Services-Aircraft Operations (PANS-OPS)—ICAO documents detailing specific procedures for the safety of air traffic navigation agreed to by ICAO signatories.

Radar Required—This note on an instrument procedure indicates aircraft using the procedure will be monitored by ATC radar during a particular phase of flight or throughout the entire procedure, as applicable. Coordination with air traffic is necessary to ensure ATC capability and agreement to provide these services before adding the note to any instrument procedure.

Receiver Autonomous Integrity Monitoring (RAIM)—An algorithm that verifies the integrity of the position output using redundant GPS measurements, or using GPS measurements and barometric aiding. An algorithm that uses additional information (e.g., multi-sensor system with inertial reference system) to verify the integrity of the position output may be acceptable as a RAIM-equivalent.

Reduced Same Runway Separation—Allows reduction of the normal ATC aircraft separation standards during landings and touch-and-goes and restricted low approach operations to increase the airport/runway capacity.

Reduced Takeoff Runway Length Procedure (RTRL)—Method used by TERPS to reduce high IFR climb gradients by shortening the available takeoff runway, thus increasing the distance to the obstacle, spot elevation, or terrain feature. It is normally printed in the IAP ▼ section. An example of an RTRL is “...or with standard takeoff minimums and a normal 200'/NM climb gradient, takeoff must occur no later than 2200' prior to departure end of runway.”

Reduced Vertical Separation Minimum (RVSM)—Reduces the vertical separation between properly equipped and certified aircraft to 1000 ft. in special qualification airspace, normally between FL290-410 inclusive.

Remotely Piloted Aircraft—The aircraft portion of an unmanned aircraft system.

Remote/Island Destination—In the absence of more restrictive MAJCOM guidance, pilots will consider a remote/island destination as any aerodrome that, due to its unique geographic location, offers no suitable alternate within two hours flying time.

RNAV (Area Navigation) Specification—A navigation specification based on RNAV that does not include the requirement for on-board performance monitoring and alerting, designated by the prefix RNAV (e.g., RNAV 5, RNAV 1).

RNAV (Area Navigation) System—A navigation system which permits operation on any desired flight path within the coverage of ground-based, space-based, or self-contained navigation aids, or a combination of these.

RNP (Required Navigation Performance) Specification—A navigation specification based on RNAV that includes the requirement for on-board performance monitoring and alerting, designated by the prefix RNP (e.g., RNP 4, RNP APCH).

RNP (Required Navigation Performance) System—An RNAV system which supports on-board performance monitoring and alerting.

Runway Environment—The runway environment consists of one or more of the following elements: The approach light system (except that the pilot may not descend below 100 ft. above the Touch Down Zone Elevation using the approach lights as a reference unless the red termination bars or the red side row bars are also visible and identifiable), the threshold, threshold markings or threshold lights, the runway end identifier lights, the touchdown zone lights, the runway or runway markings, the runway lights, the visual approach slope indicator. For more information refer to AFMAN 11-217.

Runway Visual Range (RVR)—The maximum distance in the direction of takeoff or landing at which the runway, or the specified lights or markers delineating it, can be seen from a position above a specified point on its center line at a height corresponding to the average eye-level of pilots at touch down. This value is normally determined by instruments located alongside and about 14 ft. above the runway and calibrated with reference to the high-intensity runway lights.

Satellite Based Augmentation System (SBAS)—Generic term for a wide coverage augmentation system to GNSS that calculates integrity and correction data on the ground and uses geostationary satellites to broadcast the data to SBAS users.

Self-Contained Approach—An arrival procedure, normally from an IFR altitude, to a runway, using only navigational equipment onboard the aircraft (GPS, radar, or other sensors).

Single Medium Display—A single medium display is a Head-Up Display (HUD), Head-Down Display (HDD), or Helmet-Mounted Display (HMD) presenting flight instrumentation on a single display such as a HUD combiner, a “glass” multifunction display, or a helmet visor.

(Added-AETC) Solo—A pilot flying alone or with a passenger.

Special Departure Procedure (SDP)—A procedure designed to allow a safe takeoff for multi-engine aircraft whose OEI climb rate would otherwise not meet the TERPS minimum climb gradient requirement. The runway and all known obstacles along a chosen takeoff path are analyzed and compared to the aircraft OEI takeoff and climb performance. The procedure provides a maximum allowable takeoff gross weight for given environmental conditions that ensure vertical and lateral obstacle clearance safety margins. The minimum allowable gross and net climb gradients for SDPs are typically lower than TERPS standards. Unlike TERPS, the takeoff path is selected to minimize obstacle clearance requirements and only those obstacles within the lateral limits of the chosen flight path are considered. Pilots should understand that most SDPs allow exactly zero feet of clearance between their aircraft and the offending obstacles, and provide no safety factor for pilot technique, less than 100% engine thrust, etc. The term SDP encompasses both the use of the textual obstacle data table information and the graphical departure procedures.

Standard Formation—A formation in which no participating aircraft is more than 1 NM horizontally and 100 ft. vertically from the lead aircraft.

Standard Positioning Service (SPS)—GPS service available to all users via the course/acquisition (C/A) code ranging signal.

Stopover Flight—A flight where intermediate stops are planned enroute to a final destination.

Strobe Lights—Systems such as wingtip strobes or other similar strobe light installations.

Tactical Operations—Flight operations consisting of maneuvers that are unique to the employment of air power to: gain and maintain air superiority, prevent freedom of operation for the enemy in the objective area, and to assist naval and ground forces in the attainment of their objectives. Tactical operations must be specifically MAJCOM (or CCMD) defined, approved and implemented. These operations are normally practiced only on training or exercise missions, in a form of special use airspace or on designated training ranges or routes.

Terminal Area Operations—Terminal area operations are normally those flight phases conducted within 30 NM of an airfield of intended departure or landing, or those operations on charted Standard Instrument Departures, on charted Standard Terminal Arrivals (STARs), or other flight operations between the last enroute fix/waypoint and an initial approach fix/waypoint.

Terrain Alert Warning System (TAWS)—Generic term for any on-board system taking inputs from terrain databases, radar altimeter, aircraft position sensors, etc. to activate a Ground Proximity Warning System or Automatic Ground Collision Avoidance System (AGCAS). Developed to help prevent Controlled Flight Into Terrain (CFIT) mishaps.

Traffic Collision Avoidance System (TCAS)—An airborne system that functions independently of the ground-based radar to provide collision avoidance protection between suitably equipped aircraft. TCAS I provides proximity warnings to pilots in the form of traffic advisories. TCAS II provides both traffic advisories and recommended vertical escape maneuvers, known as resolution advisories.

Unmanned Aircraft System (UAS)—Includes one or more control stations, one or more unmanned aircraft, aircraft control and payload datalinks, and mission payloads, designed or modified not to carry a human pilot and operated through remote or self-contained autonomous control. A UAS must meet all applicable requirements of a manned aircraft unless specifically exempted. The term RPA is specific to the Remotely Piloted Aircraft (the flying portion of the UAS).

Unmonitored Navigational Aid—Most NAVAIDs have internal monitoring systems that provide automatic shutdown or notification when a malfunction occurs. Unmonitored NAVAIDs lack the ability to immediately notify ATC when a malfunction occurs. The pilot may still use the NAVAID for all types of navigation, including instrument approaches, but must monitor the NAVAID for a loss of identification since no prior warning of operation may be available from ATC.

Vertical Navigation (VNAV)—A term that describes using GPS lateral and vertical guidance to define the minimums for a GPS non-precision or precision approach.

VFR-on-Top—ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in FLIP and restricted by ATC). A pilot receiving this authorization must comply with VFR visibility, cloud distance criteria, and minimum IFR altitudes.

VFR-over-the-Top—VFR flight maneuver during which an aircraft on a VFR flight plan climbs over a ceiling in VMC, maintains VMC above the clouds, then descends in VMC and lands.

Visual Meteorological Conditions (VMC)—Meteorological conditions in which visual flight rules may be used; expressed in terms of visibility, ceiling height, and aircraft clearance from

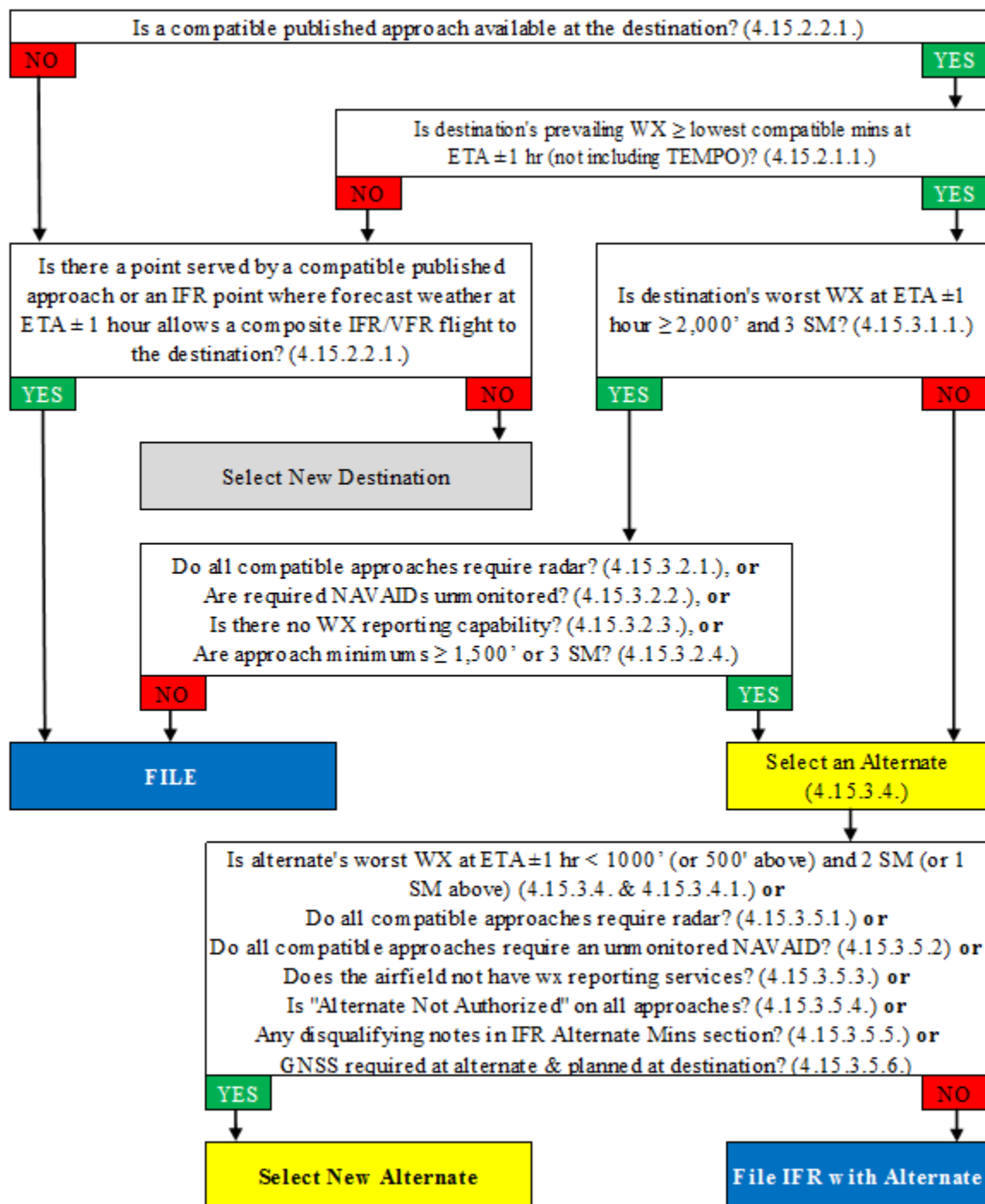
clouds along the path of flight. When these criteria do not exist, instrument meteorological conditions prevail and instrument flight rules (IFR) must be followed.

WGS-84—World Geodetic Survey-1984: Developed by the U.S. for world mapping, WGS 84 is an earth fixed global reference frame. It is the ICAO standard.

Wide Area Augmentation System (WAAS)—The U.S. implementation of SBAS which augments GPS SPS.

Attachment 2

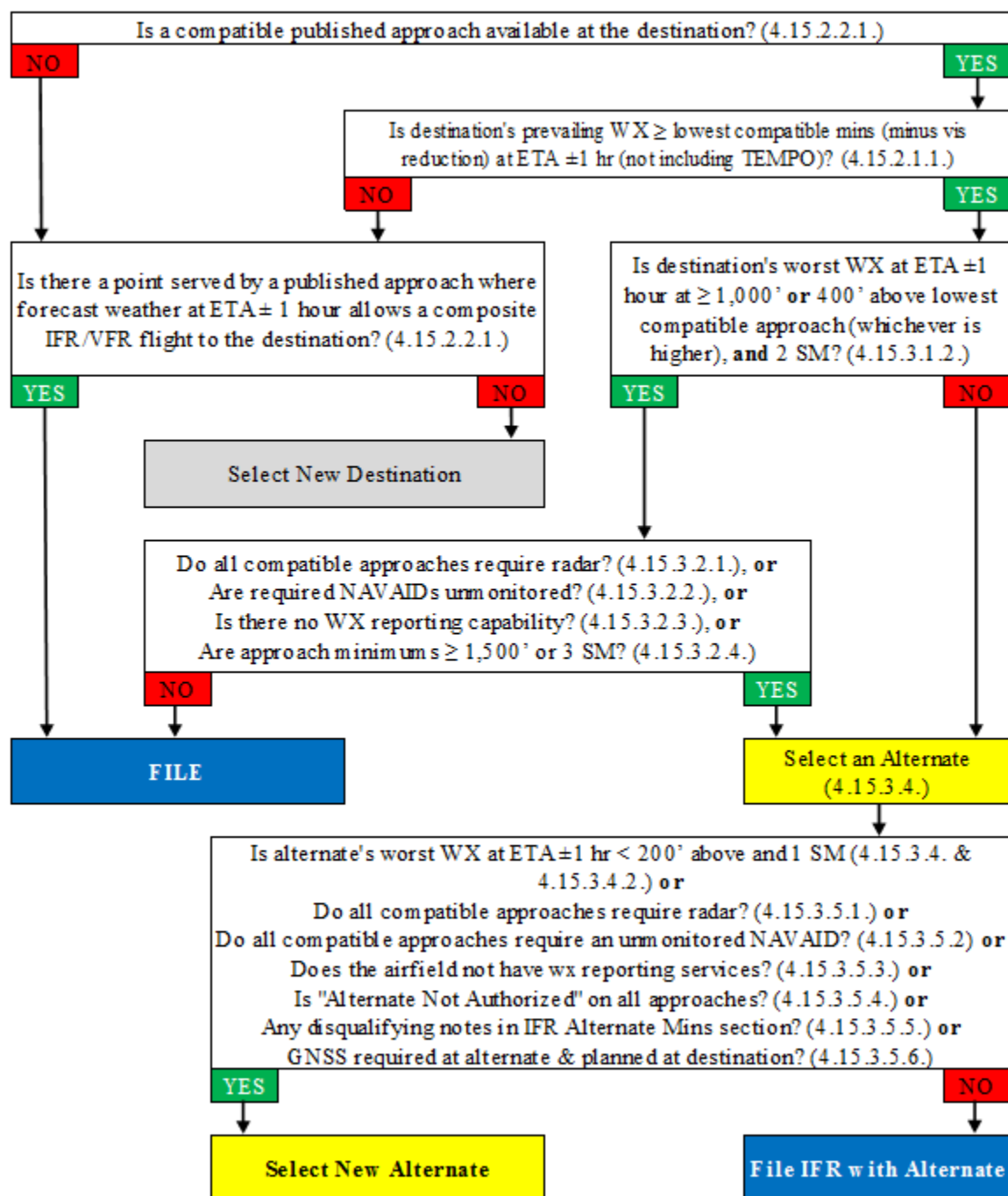
IFR Filing Decision Tree – FIXED-WING

IFR Filing Decision Tree - **FIXED-WING**

Note: Quick reference only; see full guidance to ensure complete flight planning.

Attachment 3

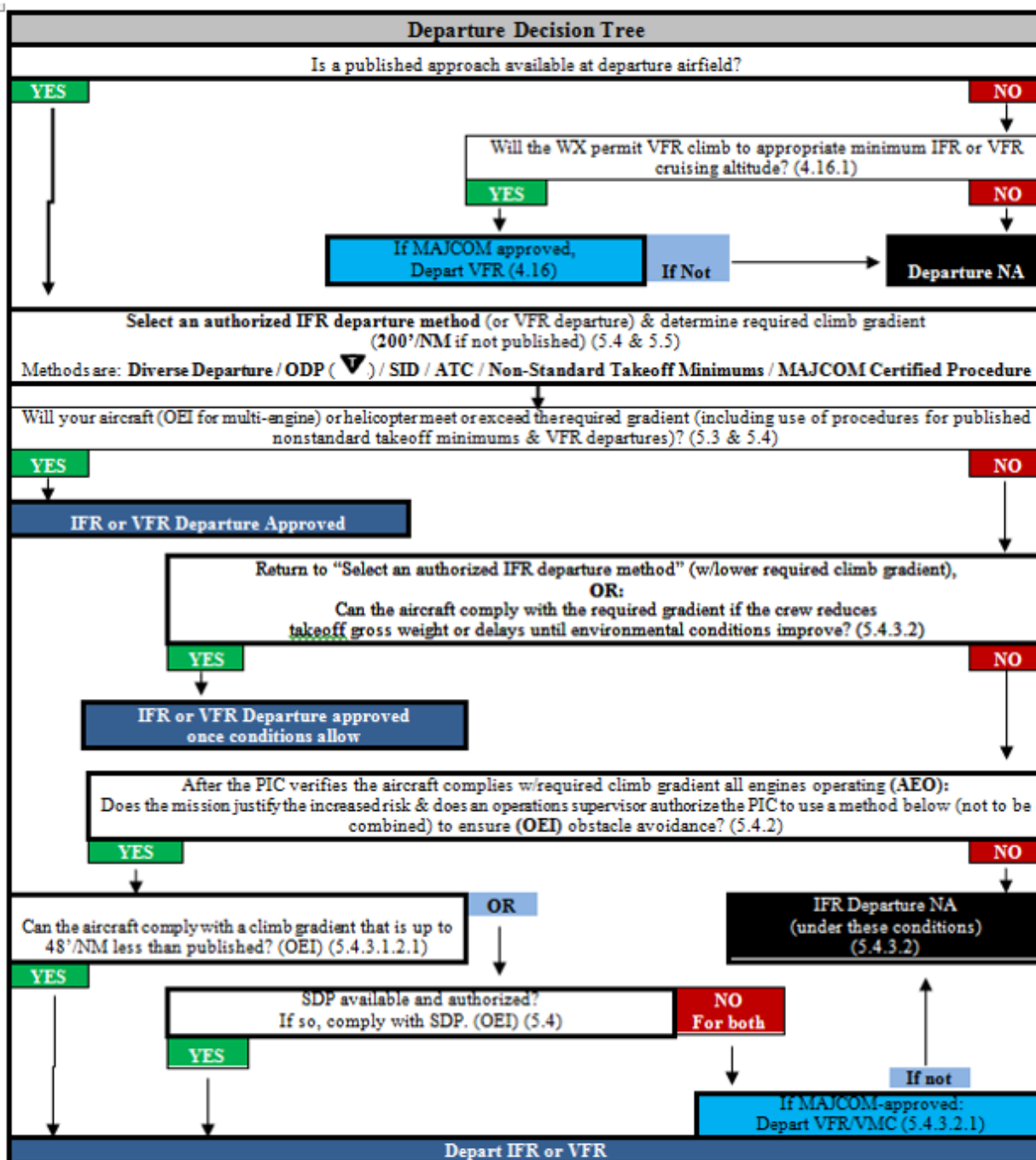
IFR FILING DECISION TREE - HELICOPTER

IFR FILING DECISION TREE - **HELICOPTER**

Note: Quick reference only; see full guidance to ensure complete flight planning.

Attachment 4

DEPARTURE DECISION TREE



Note: PICs shall conduct departure planning IAW AFMAN 11-217 and this instruction.

Attachment 5 (Added-AETC)

STANDARDIZED AVIATION RISK MANAGEMENT TOOL

A5.1. (Added-AETC) The aviation Risk Management (RM) checklist is the AETC standard RM tool for all aviation operations. While RM happens during all phases of the mission, the RM checklist is the pre-mission tool to identify operational hazards, encourage risk management strategies, and empower the correct level of leadership in mission decisions. Content and suitability of the unit's RM checklist is the unit commander's responsibility. All unit RM checklists will comply with the following guidance.

A5.2. (Added-AETC) Units will develop an individual aircraft RM checklist for use before every mission.

A5.3. (Added-AETC) The RM checklist will reflect the aircraft commander's assessment of the entire crew.

A5.4. (Added-AETC) The RM checklist will capture the risk accumulated during a single flight duty period by accounting for any sortie(s) already flown by an individual during that flight duty period. Additionally, for cross-country, out and backs, and training flights using out bases, the RM checklist will account for all sorties scheduled to be flown while off-station.

A5.5. (Added-AETC) The RM checklist will address all the operational risks associated with operations of the unit aircraft, regardless of mission. The RM checklist will:

A5.5.1. **(Added-AETC)** Identify potential hazards to mission accomplishment. As a minimum, the unit checklist will include the list of hazards to mission success in paragraph **A5.6 (Added)** and will supplement to account for unique local, mission, aircraft, and personnel hazards.

A5.5.2. **(Added-AETC)** Assign numerical values to each hazard or hazard category. The numerical value reflects the unit commander's assessment of the probability and severity of ill effects potentially resulting from exposure to a hazard.

A5.5.3. **(Added-AETC)** Quantitatively categorize mission risk as LOW, MODERATE, HIGH, or SEVERE based on the assigned risk values.

A5.5.4. **(Added-AETC)** Direct elevation of the decision authority based on the mission risk category. **Table A5.1 (Added)** identifies the mission decision authority for the assessed risk category. Unit Directors of Operations and Deputy Group commanders may approve elevated risk missions flown by squadron and group commanders, respectively.

Table A5.1. (Added-AETC) Mission Decision Authority.

I T E M	Risk Category	Mission Decision Authority
	1	LOW
	2	MODERATE
		Aircraft Commander
		Operations Supervisor

3	HIGH	Squadron Commander (or equivalent)
4	SEVERE	Operations Group Commander (or equivalent)

A5.6. (Added-AETC) Hazards to mission success.

A5.6.1. **(Added-AETC)** Mission: Formation, air refueling, solo, evaluation, OCF/FCF, orientation, low-level sorties; overwater; mountainous terrain; uncontrolled or unfamiliar airfield; short runway operations; first ride of training unit/phase; international student; short-notice mission change/reschedule; extended sortie duration; orientation flight; complex mission; any MDS/Mission/location specific mission factors.

A5.6.2. **(Added-AETC)** Weather and Airfield Conditions: Excessive crosswinds, gusty winds or tail wind, weather less than VFR; turbulence, thunderstorms or microburst forecast or actual; icing forecast or actual; bird condition moderate or greater; ITS caution or danger, or excessive temperature; excessive wind chill; night flying; braking action; any MDS/Mission/Location specific weather factors.

A5.6.3. **(Added-AETC)** Human Factors: Inexperienced instructor pilot; Commanders Awareness Program student; PC or EC; IP/student out of aircraft excessive duration; miscellaneous personal factors; crewmember sleep deprived; multiple sorties in the same flight duty period; excessive number of days flying, excessive maintenance or operational delays; student performance on previous mission; early show time; any MDS/Mission/location specific factors.

Attachment 6 (Added-AETC)**AETC ELECTRONIC FLIGHT BAG (EFB) GUIDANCE AND PROCEDURES**

A6.1. (Added-AETC) Purpose. This attachment provides guidance for the implementation of Electronic Flight Bag (EFB) in MDS where AETC is the lead MAJCOM. AETC Graduate Formal Training Units are authorized to use portable electronic devices in accordance with lead MAJCOM guidance and an approved airworthiness determination issued by the respective MDS program office.

A6.2. (Added-AETC) General guidance.

A6.2.1. **(Added-AETC)** AETC EFB devices provide quick and lightweight access to electronic Flight Information Publications (FLIP), Technical Orders (TO) and Electronic Publications (ePub). All other applications and content carried on and distributed to EFB shall be used for situational awareness only. E-readers/EFBs are not authorized in flight without specific AETC/A2/3/10 approval. Approvals per MDS are located on the AETC/A3V EFB SharePoint site

A6.2.2. **(Added-AETC)** EFB devices and support equipment are issued to aircrew members expected to perform flying duties. Individual aircrew members are responsible for the equipment received, and for complying with the guidance in this publication.

A6.2.3. **(Added-AETC)** All TO guidance used for EFBs must be obtained from Electronic Technical Information Management System (ETIMS). **Exception:** F-35 and CV-22.

A6.2.4. **(Added-AETC)** Ensure EFB terminal procedure data is displayed identically in format (size may vary) to the published paper version.

A6.3. (Added-AETC) Roles and Responsibilities.

A6.3.1. **(Added-AETC)** AETC/A3V is the functional lead for the EFB program and will:

A6.3.1.1. **(Added-AETC)** Ensure EFB operations are IAW AFI 11-202 Vol 3.

A6.3.1.2. **(Added-AETC)** Provide, validate and prioritize functional requirements for the EFB program.

A6.3.1.3. **(Added-AETC)** Provide overall operations guidance for EFB use.

A6.3.1.4. **(Added-AETC)** Ensure EFB guidance is distributed to aircrews in a timely manner.

A6.3.1.5. **(Added-AETC)** Provide EFB lessons learned and feedback.

A6.3.2. **(Added-AETC)** Group Program Manager (PM) will:

A6.3.2.1. **(Added-AETC)** Ensure unit standardization and evaluation organizations serve as the unit Office of Primary Responsibility (OPR) for unit EFB implementations.

A6.3.2.2. **(Added-AETC)** Obtain approval through AETC/A3V before initiating acquisition of EFB equipment, peripherals, support systems, or software.

A6.3.2.3. **(Added-AETC)** Provide local operational EFB guidance as required and document such guidance via Flight Crew Information File (FCIF), Read File, or unit operating instructions.

A6.3.2.4. **(Added-AETC)** Ensure EFB does not temporarily or permanently integrate with aircraft power, avionics, or organic components without prior written approval from the AETC A2/3/10.

A6.3.2.5. **(Added-AETC)** Provide suggestions and user feedback for EFB functional requirements through standardization and evaluation organizations. Inputs will be coordinated via the AETC/A3V EFB work flow process at <mailto:AETC.EFB.Office@US.AF.MIL>.

A6.3.2.6. **(Added-AETC)** Manage application licenses as directed by AETC.

A6.3.3. (Added-AETC) EFB Users:

A6.3.3.1. **(Added-AETC)** Will not store, display, process, capture, or transmit pornographic materials or other prohibited content. Additionally, members will not disenroll from MDM (if used) or perform a factory wipe unless directed by PM.

A6.3.3.2. **(Added-AETC)** Will not place the EFB in checked luggage while travelling, or leave it unattended. Device accountability must be maintained at all times. Lost, stolen, damaged or compromised devices must immediately be reported to PM. This does not prevent users from temporarily transferring device custody to other crew members as mission needs dictate.

A6.3.3.3. **(Added-AETC)** Will report to PM any unusual activity, malfunctions or software abnormality of EFB devices. Users will not attempt to “fix” a device as it may have been compromised.

A6.3.3.4. **(Added-AETC)** Will follow other guidance as described in EFB User Handbook located on the A3V Sharepoint site <https://eis.aetc.af.mil/hq/A23/A3V/default.aspx>.

A6.3.3.5. **(Added-AETC)** Will complete the initial user training. The training will be led by an AETC EFB Office appointed subject matter expert, and will include self-study of this attachment and hands-on familiarization. In the course of the initial training the user will take a partially provisioned EFB and produce a fully-functional EFB updated with current ePubs, eFLIP and eTOs. Training materials are located on the A3V Sharepoint site <https://eis.aetc.af.mil/hq/A23/A3V/default.aspx>.

A6.4. (Added-AETC) Security.

A6.4.1. **(Added-AETC) Unclassified Use Only.** EFBs will be used to store, process, and display unclassified data only. Under no circumstances will classified information be stored, processed, displayed or transmitted by means of an EFB.

A6.4.2. (Added-AETC) Cybersecurity.

A6.4.2.1. **(Added-AETC)** All EFBs will be protected with a passcode and/or password.

A6.4.2.2. **(Added-AETC)** EFB users will protect For Official Use Only (FOUO) data using approved protection measures in compliance with Information Assurance requirements.

A6.4.2.3. **(Added-AETC)** “iMessage” or other messaging applications are not authorized for the transmission of FOUO information.

A6.4.2.4. **(Added-AETC)** “Share My Location” may be enabled for mission approved applications per the Baseline Configuration.

A6.4.2.5. **(Added-AETC)** EFB will not be configured with Family Sharing.

A6.4.2.6. **(Added-AETC)** Wi-Fi access shall only be over a Wi-Fi Protected Access 2 (WPA2) encrypted connection per the DISA Wireless Security Technical Implementation Guide (STIG).

A6.4.2.7. **(Added-AETC)** Do not upload EFB content (e.g. pictures, documents, etc.) to social media or non-government e-mail.

A6.5. (Added-AETC) Operation.

A6.5.1. (Added-AETC) Pre-Flight.

A6.5.1.1. **(Added-AETC)** Wireless devices must be approved by AETC/A2/3/10. The EFB Baseline Configuration control document on the A3V Sharepoint site lists authorized devices which may be used as a means to increase aircrew situational awareness and flight safety.

A6.5.1.2. **(Added-AETC)** Each aircrew member will ensure the EFB is synched with the current electronic Technical Orders and publications.

A6.5.1.3. **(Added-AETC)** Ensure battery life is sufficient to cover the planned mission plus two additional flight hours under normal use for the planned flight profile. As a recommendation, crews should have a minimum of 80% battery charge at step time.

A6.5.1.4. **(Added-AETC)** A minimum of one copy of paper backups of FLIP and checklists are required to be carried in flight unless paperless transition has been completed and approved by A2/3/10.

A6.5.2. (Added-AETC) Prior to Take-Off.

A6.5.2.1. **(Added-AETC)** Users will confirm device screen auto-lock settings are turned off to ensure the EFB screen does not change or go blank during critical phases of flight.

A6.5.2.2. **(Added-AETC)** When performing duties in direct support of flying operations, users will ensure password protection measures do not cause distractions during critical phases of flight.

A6.5.3. (Added-AETC) In-Flight Normal Operations.

A6.5.3.1. **(Added-AETC)** EFBs are primarily authorized for viewing ePubs, TOs, and electronic FLIP. Any use of the EFB device for Situational Awareness (SA), note taking, or other activities must not interfere with primary flight duties.

A6.5.3.2. **(Added-AETC)** When not in use, EFB devices should be stowed safely and placed in sleep mode to conserve battery life.

A6.5.3.3. **(Added-AETC)** Applications listed on the EFB Baseline Configuration control document are the only authorized applications on the EFB.

A6.5.3.4. **(Added-AETC)** Aircrew should avoid prolonged direct heat exposure to EFB due to the possibility of internal shutdown.

A6.6. (Added-AETC) Configuration Management.

A6.6.1. **(Added-AETC)** EFB devices will be configured IAW EFB Baseline Configuration and User profiles maintained on the A3V Sharepoint (<https://eis.aetc.af.mil/hq/A23/A3V/default.aspx>).

A6.6.2. **(Added-AETC)** Aircrew members are prohibited from altering the security configuration or unit passcode unless requested to do so by the PM for troubleshooting purposes.

A6.6.3. **(Added-AETC)** Tethered EFB operations are limited to designated government provided computers (i.e. base stations). Issued EFB devices will at no time be connected via USB cables to personally owned computers, morale systems, NIPR or SIPR workstations.

A6.6.4. **(Added-AETC)** Group-level Stan/Eval functions will maintain a master publication library of all applicable base-level publications and supplements. Duplication of A3V publications is not necessary. (T-3)

A6.6.5. **(Added-AETC)** PM is responsible for maintaining a standardized squadron publications folder.

A6.6.6. **(Added-AETC)** Squadron publications folders must contain, at a minimum, all required publications for each crew position. Additional publications or flight reference materials may be included at unit discretion.

A6.7. (Added-AETC) Procedures for lost and stolen EFBs.

A6.7.1. **(Added-AETC)** Aircrew members will immediately report suspected or actual loss or theft of EFB to PM in order to initiate remote wiping and deactivation of the device. The PM will follow the procedures for lost/stolen devices.

A6.8. (Added-AETC) Damaged devices.

A6.8.1. **(Added-AETC)** A device is "damaged" when, despite being partly or even fully functional, has obvious physical damage that makes its continued use in-flight impractical. An example of a damaged device is one with a cracked screen.

A6.8.2. **(Added-AETC)** A device is "destroyed" when it is damaged to such an extent that there is no hope of repair. Examples include EFB that have been smashed or bent and can no longer be powered on.

A6.8.3. **(Added-AETC)** When a device is turned in and shows evidence of damage that noticeably exceeds fair wear and tear, personnel at the PM or C2MS location will request the member to write a Memorandum for Record documenting in detail the circumstances of the damage and the extent of the individual member's liability. A ROS may be initiated IAW AFMAN 23-220 if there is evidence of gross negligence or willful misconduct.

A6.8.4. **(Added-AETC)** Damaged devices with strictly cosmetic damage (i.e. scratches, dents, marring, etc.) may be returned to service by PM.

A6.8.5. **(Added-AETC)** Devices with damage that might interfere with EFB functionality or result in premature device failure will be sent to the PM for disposal.